## TELEDYNE RISI, INC. d/b/a TELEDYNE ELECTRONIC SAFETY PRODUCTS, a California corporation,

VS.

MARTIN-BAKER AIRCRAFT COMPANY LTD., a United Kingdom corporation, et. al.

United States District Court, Central District of California

Case No. 2:15-CV-07936-SJO-GJSx

**Expert Witness Report** 

Mark Newton, CPA, ABV, CFF

August 31, 2017

Oakland, California

Teledyne RISI, Inc. v. Martin-Baker Aircraft Company, LTD, et. al. United States District Court, Central District of California Case No. 2:15-CV-07936-SJO-GJSx

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#### I. Scope of Engagement

I have been engaged by Rose Walker, LLP, counsel for Plaintiff Teledyne RISI, Inc. d/b/a Teledyne Electronic Safety Products ('TESP') to calculate the economic loss suffered by Plaintiff as a direct result of breach of contract and unfair competition practices conducted by Defendant, Martin-Baker Aircraft Company, Ltd ('Martin-Baker'). I have no opinions as to liability issues in this matter.

#### II. Qualifications

I am a Certified Public Accountant, licensed in the States of Washington and California. I have been retained to assess economic damages on hundreds of cases during my career spanning over 40 years. I regularly present seminars to various companies and claims associations pertaining to loss of income and other forensic accounting and economic topics. Additionally, I have testified as an expert in over 150 cases in various venues.

I am a shareholder of Hagen, Streiff, Newton & Oshiro, Accountants, P.C. My curriculum vitae is attached as Exhibit 2 to this report and my list of testimonies is included as Exhibit 3.

#### III. Use and Distribution of this Report

This use and distribution of this report are limited to this litigation, the attorneys, experts, and the court under the terms of the applicable protective order.

#### IV. Background

Martin-Baker Aircraft supplies the ejection seat for the F-35 Joint Strike Fighter ('JSF') as a contractor to BAE Systems ('BAE') that is ultimately delivered to Lockheed Martin. TESP was previously a subcontractor to Martin-Baker that supplied the sequencer for the ejection system. A sequencer, in simple terms, is an electronic device that controls the ejection seat to safely recover the aircrew upon ejection from an aircraft.

TESP and Martin-Baker entered into a Letter of Agreement on July 3, 2003 wherein TESP was to provide Martin-Baker with sequencers for the F-35 program. The Agreement required Martin-Baker to exclusively procure all sequencers for the full duration of the F-35 program from TESP. In 2012, Martin-Baker initiated a new design for a sequencer for the F-35. Ultimately, Martin-Baker's new design was accepted in August 2016. Instead of using TESP to manufacture the sequencer, Martin-Baker has been using another company for production thereby depriving TESP of revenue and profit for a majority of the life of the F-35 program.

In addition to the F-35 sequencer, TESP had been the sole source provider of both NACES and FAST sequencers since 1985 to the U.S. Navy ('Navy'), as well as performing repairs and replacements for said sequencers. In 2013, the Navy requested a new sequencer which would serve as the retrofit replacement of the NACES sequencer, or FASTr. It is my understanding that Martin-Baker submitted a proposal for two options to the U.S. Navy, a Martin-Baker designed sequencer and a TESP designed sequencer. Further, I understand that Martin-Baker artificially inflated the price of the TESP designed sequencer and stated the TESP designed sequencer was not fully compliant with Martin-Baker specifications although those specifications were not directed by the Navy. I understand that the Navy asked questions about the TESP sequencer to which TESP responded to Martin-Baker, but Martin-Baker never forwarded such responses to the Navy and, ultimately, withdrew TESP's proposal. It is my understanding the contract was awarded to Martin-Baker and as a result, TESP will lose revenue and profit related to future retrofitting, future F-18/T-45 builds and the corresponding repairs and replacements.

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#### a. F-35 Joint Strike Fighter (JSF)

The following is excerpted from Lockheed Martin's f35.com website:

In 1997, Lockheed Martin was selected as one of two companies to participate in the Joint Strike Fighter concept demonstration phase. In October 2001, the Lockheed Martin X-35 was chosen as the winner of the competition and teamed with Northrop Grumman and BAE Systems to begin production.

The first production F-35A rolled out of the assembly in Fort Worth, Texas, in February of 2006. Later that year, the stealthy F-35 Joint Strike Fighter, in development by the United States and eight other countries, was named the "Lightning II," in homage to two earlier fighters.

In December of 2006, the F-35 completed its first flight. Over the next few years, flight and ground test articles of all three variants rolled off the production line and began collecting test points. The first production F-35 conducted its first flight in February of 2011 with deliveries of the aircraft beginning that very same year.

In 2012, the F-35 ramped up with 30 aircraft deliveries and increased testing operations across the United States. The program reached several milestones in weapons separation testing, angle of attack testing, aerial refueling training, and surpassed more than 5,000 flight hours with more than 2,100 recorded flights in that year.

The F-35 variants are:

F-35A – Conventional takeoff and landing

F-35B - Short takeoff/vertical landing

F-35C - Carrier variant

At this time, there are 12 global participants including as partners (9 total) the United States, Australia, Canada, Denmark, Italy, Netherlands, Norway, Turkey and the United Kingdom. Foreign military sales will be made to Israel, Japan and South Korea<sup>1</sup>.

The program requires 300,000 parts from 1,500 international suppliers. Factories for the F-35 are located in Fort Worth, Texas, Cameri, Italy and Nagoya, Japan.

#### b. Teledyne Electronic Safety Products

The following is excerpted from TESP's website2:

Teledyne Electronic Safety Products (TESP) is a Strategic Business Unit of Teledyne Technologies and has been a separate business unit of the Teledyne family since February of 1986. The electronics unit was initially created as a spin-off from Teledyne Systems in order to develop an electronic ejection seat controller.

TESP designed, developed, and qualified the U.S. Navy's NACES Ejection Seat Electronic Sequencer, which has been in continuous production since 1989. These sequencers are currently flying in the T-45 and F/A-18. With that success, TESP moved on to become a

<sup>&</sup>lt;sup>1</sup> F35.com/about/fast-facts.

<sup>&</sup>lt;sup>2</sup> TESP is now a strategic business unit of Teledyne RISI, Inc., a California corporation and a wholly-owned subsidiary of Teledyne Technologies Incorporated.

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second source supplier for the USAF ACES II electronic ejection seat sequencer. We have produced over 9000 ACES II models along with specialized training courses and supporting test equipment.

In 1989, TESP was selected to design, qualify, and produce the first electronic interseat sequencing system for use in the 2-place A-12 aircraft for the U.S. Navy. In 1992, TESP was again selected to design, develop, qualify, and produce the electronic interseat sequencing system for the USAF's F-22 Raptor. In 2005, The F-22 system was adapted to the F-15 and is currently flying in South Korean, Singapore, and Saudi Arabia. Teledyne then designed, developed, qualified and delivered a field/maintenance support test set for the F-22/F-15 escape system.

TESP completed a major upgrade of the NACES ejection seat sequencer and production deliveries began in 2002. The new unit is called NACES/FAST. The entire electronics package has been redesigned and modernized to allow for expanded growth capabilities along with significantly reduced costs. The embedded firmware was programmed using ADA. TESP modified this configuration for use in the new F-35 Joint Strike Fighter ejection seat.

In 2003, a jointly funded program to replace the USAF ACES II sequencer with a fully digital (Digital Recovery Sequencer, DRS) design was initiated by Goodrich / USAF / TESP. This new digital unit was qualified in 2005 and to date over 7,500 units have been delivered. Then in 2012, an upgrade to the DRS was initiated to add solid state pressure sensors and 3 axis accelerometers. This upgrade is called Modernized ACES Seat Sequencer (MASS) which was qualified in Q2 2014. To date, over 1,000 MASS units have been delivered to the USAF and FMS users.

#### c. History of TESP and Martin-Baker F-35 Agreements

- **Teaming Agreement** January 13, 2000 (Per Memorandum of Understanding)
- Memorandum of Agreement February 19, 2001 TESP exclusive provider of Electronic Products with MBA. Seems to apply to all products. This agreement was "ended" by both parties<sup>3</sup>.
- Letter of Agreement July 3, 2003 TESP exclusive provider to MBA for JSF<sup>4</sup>.

On January 13, 2000, MBA and TESP signed a Memorandum of Understanding for the JSF program that stated in part:

"Proposal Support – It is agreed that MBA will, in any proposal which the Parties submit and in all discussions with respect thereto, identify ESP as a (sic) their exclusive supplier of sequencers and related electronic equipment (subject to acceptable pricing) to be used in the ejection seat or escape system, and will state in such proposal or discussions the relationship of the Parties as hereinafter set forth."

The January 2000 Memorandum of Understanding was replaced by a Memorandum of Agreement on February 19, 2001 that granted exclusivity to TESP with regard to electronic products sourced by Martin-Baker for apparently all ejection systems to be made by Martin-Baker. This agreement

<sup>&</sup>lt;sup>3</sup> Mike Summer Exhibit M146.

<sup>&</sup>lt;sup>4</sup> John Martin Exhibit Martin 01.

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was canceled by both parties and replaced by the Letter of Agreement on July 3, 2003 for the F-35 program.

The July 3, 2003 Letter of Agreement states in part "In consideration of TESP's investment in the JSF program, TESP will act as the exclusive supplier of sequencers to be used in the JSF ejection system for the full duration of the JSF program."

TESP received exclusive orders for development costs and Low Rate Initial Production (LRIP) numbers 1 through 9 and a partial order for LRIP 10. Future, LRIP and Full Rate Production ('FRP') orders will not be awarded to TESP but have or will be awarded to a different manufacturer by Martin-Baker.

#### V. Opinions of Economic Loss

My opinion of TESP's economic loss is summarized in Table 1.

Summary of Damages (By Program) at Net Present Value										
Description		JSF		FASTr		Total				
Total - Damages	\$	47,205,889	\$	24,832,113	\$	72,038,002				
		Table 1								

My opinion is supported by my Schedules attached as part of this report that show my calculations, assumptions and sources of information that I have relied upon.

#### a. Analysis of Loss - Joint-Strike Fighter Program

I measure the lost profit suffered by TESP from the JSF program to be \$47,205,899, at net present value, as of September 1, 2017.

#### b. Quantity of JSF Sequencers

There are four types of sequencer sales TESP expected to build and deliver as part of the JSF program:

- Deliveries for each plane built Original Deliveries
- Beyond Economic Replacements
- Spares To support installed quantities on Original and Replaced Deliveries
- Periodic Replacements

In addition, TESP would have also earned revenue and profit from repairs of returned sequencers.

#### i. Original Deliveries

As of the date of this report, 3,352 JSF aircraft have been committed for purchase or delivered to the U.S, its partners and other countries<sup>5</sup>. Based upon historical experience, successful long-term programs typically experience add-on orders over time. TESP conservatively estimates 1,259 additional planes will be ordered over the life of the program, or a 38% increase.

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<sup>&</sup>lt;sup>5</sup> GAO Report 16-390

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Therefore, I have used 4,474 planes for the life of the JSF program as the forecast number of planes upon which to base my estimate of sequencers TESP would have sold. Schedule 6.0 of this report provides a detailed listing of the total plane deliveries I have tallied on an annual basis over the period of 2011 through 2044.

Summary of JSF Committed, Delivered and Additional Future Orders									
Description	U.S.	Other	Total						
Committed	2,457	895	3,352						
Less: Delivered (Thru 2015)	108	29	137						
Subtotal	2,349	866	3,215						
Additional (A)	(A)	(A)	1,259						
Total - To be Delivered	. /	• /	4,474						
(		- ,							
	Table 2								

The overall estimate of 38% increase over original orders is conservative when compared to past programs. Table 3 shows two US Military aircraft programs, F-16 (ACES/DRS/MASS) and F-18 (NACES/FAST) in which TESP supplied sequencers presenting the original quantities of planes ordered along with the approximate number of planes produced, to date.

F-16 and F-18 Aircraft Originally Ordered & Delivered to Date									
Description	F-16	F-18	Combined						
Original Ordered	1,008	800	1,808						
Delivered to Date	4,588	2,300	6,888						
Factor	455%	288%	381%						
	Table 3								

#### ii. Sequencer Spares

According to TESP, spare sequencers are typically carried at a rate of 5% of active inservice aircraft. As a result, I have used 5% to estimate 229 spare sequencers TESP would have delivered as part of the JSF program. See Schedule 6.0 for details.

#### iii. Repairs

I have estimated the number of repairs using historical rates of repairs experienced by TESP in its NACES and FAST sequencer programs<sup>6</sup>. In these programs, the number of returns during the first 5 years averaged .87% of active in-service units. In years 6 through 16, returns averaged 2.23% of active in-service units and after 16 years returns in the

<sup>&</sup>lt;sup>6</sup> Schedule 6.2

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NACES program were 3.45% of active in-service units. I have provided the historical data for returns on Schedule 6.2<sup>789</sup>.

#### iv. Periodic Replacements

According to TESP, the sequencers have a service life of at least 20 years. I have assumed that after 20 years, sequencers will require replacement. The replacements in my model, shown on Schedule 3.0, begin in 2036 and mirror the deliveries of sequencers that would have occurred in 2016 and after. Replacement sales of sequencers through 2060 total 3,710 units.

#### v. Beyond Economic Repair Replacements (BERs)

A small number of sequencers returned to TESP for repair cannot be economically repaired. In such cases, it is expected that a new sequencer will be sold. I calculate this type of sale on Schedule 6.0 (shown also on Schedule 3.0) which totals 454 units on original delivers and 202 units on replacement units through 2060. The estimate for BERs is based upon the historical experience for NACES and FAST which is displayed on Schedule 6.2.

#### vi. Summary of JSF Sequencer Sales Quantities

Table 4 summarizes my calculation of the total deliveries of JSF sequencers TESP has lost as a result of Martin-Baker's decision to replace TESP as the manufacturer of sequencers.

Summary of JSF Sequencer Damage Quantities									
Description	Original Deliveries	Periodic Replacement	Total						
Deliveries	4,934	3,710	8,644						
BER - Replacements  Total	454 5,388	202 3,912	656 9,300						
	Table 4								

#### c. Lost Profit - JSF

I determine lost profit on the sale of JSF sequencers by calculating sales per unit multiplied by the lost quantity to derive loss of sales. I then deduct TESP's variable costs to manufacture the sequencers. Variable costs are comprised of material used to make the sequencer, direct labor and manufacturing overhead.

#### i. Sales Price

First some background on sales pricing in the aerospace industry. In some cases, parties use a "pricing curve" model to estimate price that considers:

Economies of scale

<sup>&</sup>lt;sup>7</sup> Source for NACES – 'NACES ROR Return History 26JUL2017.xls'

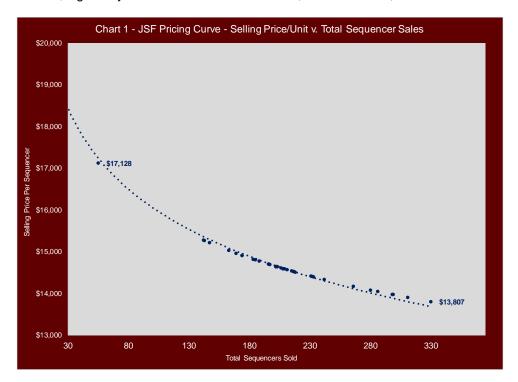
<sup>8</sup> Source for FAST - 'FAST ROR Return History 26JUL2017.xls'

<sup>&</sup>lt;sup>9</sup> Source for Ejections – 'Ejection Report.xls'

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- Learning curve
- Inflation

The model is a logarithmic equation that predicts a reduction in price, leaving aside inflation, as the quantity of an order for a period of time, typically one year, increases as illustrated in Chart 1. It should be noted, that a similar pricing curve was referenced in the Letter of Agreement<sup>10</sup>, signed by both Martin-Baker and TESP, dated June 24, 2003.



In fact, TESP and Martin-Baker used this type of model to determine the pricing of the JSF sequencers TESP sold in the Development Phase through LRIP 8 based upon a starting point proposal on pricing submitted by TESP early in the program. In 2014, BAE/JSF Program Office demanded that the parties resubmit pricing proposals using updated costs to make the JSF parts including TESP's sequencer. This process basically "reset" the starting point of TESP's price used for LRIP 9.

In determining sales price, I have used TESP's last agreed price for a full LRIP lost (LRIP 9) which was \$17,317 for the manufacture of a baseline of 55 units in 2015. TESP also provided the pricing curve formula to me which I have used to determine the price for each year of the life of the program through 2060 which is shown on Schedule 3.0.

#### ii. Direct Cost of Material

The variable direct cost of material is determined as 25.80% of sales value. This factor is based upon the combined cost of TESP's deliveries of both JSF and FAST units during the years 2013 through 2015, before any impact from this dispute affected TESP.

<sup>&</sup>lt;sup>10</sup> Letter of Agreement TESP Reference MBA-JSF-T&C-2003-193

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#### iii. Direct Labor & Manufacturing Overhead

Direct labor is often considered to be 100% variable in the measurement of lost profits and it is the easiest assumption to make; and sometimes it is the correct approach. In practice, however, direct labor costs tend to be semi-variable. In other words, to some extent the cost will vary with sales but a base level of labor will exist regardless of production levels within a normal fluctuation range.

Manufacturing overhead is also semi-variable. Some costs, such as facility costs, are fixed costs and do not vary with sales unless sales either increase so much or decline so much that the entity must change locations to accommodate the new circumstances.

In government contracting, direct labor and manufacturing overhead are connected due to the requirements of government accounting standards. Direct labor is incurred only when time can be directly charged to a particular project. If some of the time for a worker that assembles a product cannot be charged to a project, that worker's time and cost is then charged to manufacturing overhead as indirect labor.

In TESP's case, approximately 78% of its manufacturing overhead is comprised of indirect labor<sup>11</sup>. Thus, in assessing the variable costs to be used in determining lost profit, I have analyzed the behavior of direct labor and manufacturing overhead on a combined basis.



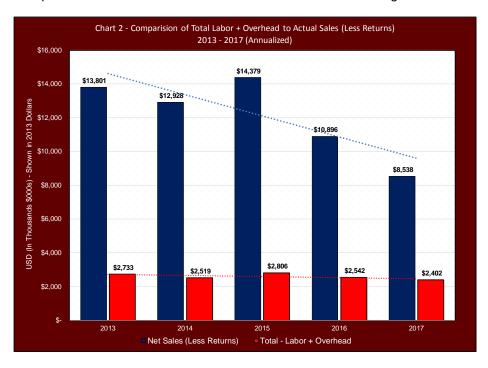


Chart 2 shows that during 2013 through 2017 that despite wide fluctuations in sales, labor and overhead have changed only slightly.

<sup>&</sup>lt;sup>11</sup> Per Eileen Fried, Group Controller, Teledyne Reynolds.

<sup>&</sup>lt;sup>12</sup> I have adjusted all amounts into 2013 dollars using 2.5% inflation rate. Additionally, 2017 is based on YTD through June, which I have doubled to present on an annualized basis.

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The data for TESP does indicate that labor and overhead fluctuate as expected with changes in sales. In other words, when sales increase the costs increase slightly and when sales decline the costs decline slightly, as well.

Based on my analysis shown on Schedule 8.0, the proportion of labor and overhead that is variable is 27.34% of total labor and overhead. Thus, total labor and manufacturing overhead historically is 19.48%<sup>13</sup> of sales value of which 27.34%, or 5.33%, varies with sales.

#### iv. Other Operational Costs

I have not adjusted sales for costs such as Sales and General and Administrative (SG&A) expenses as I deem such costs to be fixed and unrelated to sales volume. TESP's financial history demonstrates that SG&A remain essentially flat except for unusual legal costs incurred in 2016 and 2017. Furthermore, overhead normally factored into job cost proposals from other divisions of Teledyne are also deemed to be fixed and will not vary with TESP's sales volume.

#### d. JSF Repair Revenue and Profit Losses

As with any program such as this, TESP would have earned revenue and profit on repairs to sequencers sold as part of the JSF program. I earlier discussed that I estimated unit returns based upon TESP's historical experience with NACES and FAST shown on Schedule 6.2. I have determined the revenue for repairs based upon the most recent pricing of repairs TESP performed on returned FAST sequencers. This price is determined from shipping reports I have been provided by TESP<sup>14</sup>. This price is used in the pricing curve provided to me by TESP that is very similar to pricing curve described for sequencer sales.

I have used similar factors for materials, labor and overhead experienced on recent repairs of both NACES and FAST sequencers<sup>15</sup> as described for the sequencer sales to determine the variable costs to deduct from sales value as shown on Schedule 3.1.

#### e. Discounting to Net Present Value

Most of the lost profits I calculate for TESP extend long into the future. Therefore, it is necessary to discount such losses to present value to properly represent the current value of the losses in a lump sum amount. My measurement of profit losses through 2060 for the JSF sequencer and related repairs totals \$219.8 million. Discounted to net present value, these losses are approximately \$47.2 million using a discount rate of 8.0%.

The derivation of the discount and capitalization rates is shown on Schedule 5.0.

- The discount rate is computed as follows:
  - (i) I start with the long-term (20 Year) U.S. Treasury Bond Yield of 2.48% as of 6/23/17.
  - (ii) I add the equity risk premium of 5.73% calculated by multiplying the beta for Teledyne 5.97% equity risk premium for the market as a whole, derived from the Duff and Phelps survey of historical stock and bond returns through 2016.<sup>16</sup> I utilize the "supply side"

<sup>&</sup>lt;sup>13</sup> Schedule 7.0 shows labor (5.92%) and overhead (13.56%) percentages separately before application of variable proportion.

<sup>&</sup>lt;sup>14</sup> Source 'Mapics Shipper Log HSNO.xls'

<sup>&</sup>lt;sup>15</sup> See Schedules 7.0 and 7.2.

<sup>&</sup>lt;sup>16</sup> 2017 Valuation Handbook, U.S. Guide to cost of Capital, Appendix 3; Duff & Phelps.

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equity risk premium, which adjusts the excess returns solely to increases in price/earnings ratios, which are not likely to recur.

- (a) Beta of .96 as derived from two advisory services, Charles Schwab and Ned Davis.
- (b) Equity risk premium of  $5.73\% = .96 \times 5.97\%$ .
- (iii) I add to that 1.72%, which is the average premium over the average stock for stocks with market capitalization of \$1.3 billion. I assume that the aerospace and defense division of the company is 30% of the total value of the company, since revenues for that division are 30% of total revenues. The current market capitalization of Teledyne is \$4.37 billion.
- (iv) I add to the resulting number the industry risk premium. In this case, the average risk premium for companies in SIC 372, Aircrafts and Parts, is negative 1.32%<sup>17</sup>, meaning that the industry is less risky than the market as a whole.
- (v) I elect not to add a specific company risk, given the size, professional management and low risk of the industry. Also, the parent company of TESP is publicly traded so that equity risk is valued by the market. I considered the following factors:
  - 1. Positive
    - a. Long and successful history.
    - b. Proprietary products.
    - c. Strong and competent management.
  - 2. Negative Factors
    - a. A large portion of business is dependent on US Congress; revenues dropped in past years due to the budget sequester.
    - b. Competitive environment for many products implies price softness.
- (vi) Considering all the above factors, it is my opinion that there should be a 0% specific company risk factor for the subject company.
- (vii) Summing all the above factors, gives an equity discount rate of 8.61%.
- (viii) The standard method in valuations such as this is to discount the subject company by the Weighted Average Cost of Capital, or WACC, which calculates a weighted average of the cost of equity capital and the cost of debt capital. According to the 2016 annual report, long term debt was \$611,700,000 at year end. The weighted average interest rate was 3.27%. Teledyne's overall tax report for 2016 was 20.9%. The ratio of debt to debt plus market capitalization is 12%; weighting the cost of debt by 12% and the cost of equity capital by 88% results in a WACC of 7.89%.
- (ix) This amount is rounded to 8.0%.

#### f. Analysis of FASTr Lost Profits

In my opinion, TESP has suffered damages related to the FASTr program totaling \$73.2 million or \$24.8 million, at net present value.

As described earlier, FASTr is the program to replace Legacy NACES sequencers that have been in service since 1989. The NACES sequencer program was succeeded by TESP's FAST

<sup>&</sup>lt;sup>17</sup> 2017 Valuation Handbook, U.S. Guide to cost of Capital, Appendix 3A; Duff & Phelps.

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sequencers in 2002 but many of the NACES sequencers are still in service. It is my understanding that Martin-Baker has been awarded the FASTr sequencer by the Navy and TESP believes Martin-Baker used unfair business practices to win the program. If not for the unfair business practices allegedly used by Martin-Baker, TESP believes it would have won the program especially because TESP has been the exclusive provider of the NACES and FAST sequencers for the last 28 years. As a result of this situation, TESP also believes it will be unable to be the provider of replacement sequencers for FAST when they have reached the end of their service lives.

The FASTr sequencers will also be used for 213 new F-18 seats that will be manufactured beginning in 2018.

#### i. Lost FASTr Sequencers

Based upon discussions with representatives of TESP, it would have begun deliveries of FASTr units in 2018 for the new F-18s<sup>18</sup> and it would have begun deliveries of FASTr replacement of NACES units in 2019 which is 30 years after NACES were delivered. I then assume replacement of FAST sequencers would have begun in 2022 which is 20 years after FAST sequencers were first delivered. It is my understanding that the NACES program did not have necessary funds allocated at the 20-year mark and was delayed. The replacement quantities are based upon the deliveries that occurred 30/20 years (for NACES/FAST, respectively) earlier adjusted downward by 13% to reflect sequencers no longer in service due to ejections and other reasons. My calculation of total FASTr units is shown on Schedule 4.0 and totals 3,242 sequencers through 2060. More detail of my calculated lost units is shown on Schedule 6.1.

#### ii. Sales Price of FASTr Sequencers

I have used the same pricing structure and price curve for FASTr as used for the JSF sequencers. According to representatives of TESP, the cost to manufacture a FASTr sequencer would be similar to the cost to make a JSF sequencer so that the sales prices should be essentially the same.

#### iii. Variable Material Costs, Direct Labor and Manufacturing Overhead

I have used the same factors for material and direct labor and manufacturing overhead as used for the JSF damage calculations for sequencer deliveries and repairs, respectively.

#### iv. FASTr Repair Revenue and Lost Profit

This category of damage to TESP is calculated in a similar way to the method I used to determine repair profit losses for the JSF program. Schedule 6.1 shows the detail of my calculation of repair units that totals 1,947 sequencers. As for the JSF program, I based my estimate of repair units on TESP's historical experience for NACES and FAST shown on Schedule 6.2.

I have determined the revenue for repairs based upon the most recent pricing of repairs TESP performed on returned FAST sequencers. This price is determined from shipping reports I have been provided by TESP<sup>20</sup>. This price is used in the pricing curve provided to me by TESP that is very similar to the pricing curve described for sequencer sales.

<sup>&</sup>lt;sup>18</sup> See Email from Steven Bordeaux (US Navy) to Bob Ferguson (TESP)

<sup>&</sup>lt;sup>19</sup> Schedule 6.2.

<sup>&</sup>lt;sup>20</sup> Source 'Mapics Shipper Log\_HSNO.xls'

Teledyne RISI, Inc. v. Martin-Baker Aircraft Company, LTD, et. al. United States District Court, Central District of California Case No. 2:15-CV-07936-SJO-GJSx

I have used similar factors for materials, labor and overhead experienced on recent repairs of both NACES and FAST sequencers<sup>21</sup> as described for the sequencer sales to determine the variable costs to deduct from sales value as shown on Schedule 3.1.

#### g. Conclusion

I conclude that TESP has suffered a loss of income totaling \$72,038,002 at net present value in economic damages resulting from the improper loss of the JSF and FASTr program revenues caused by Martin-Baker.

#### VI. <u>Assumptions</u>

Many of my assumptions that I have used have been mentioned in various portions of this narrative report. In addition, the section of this report that contains my schedules and calculations include references to assumptions I have made and sources of information used for my calculations and opinions.

#### VII. Documents Provided or Used

A listing of the documents I have received in this case and that I have relied upon to determine my opinions is provided in Exhibit 4 of this report and the footnotes of the accompanying schedules.

#### VIII. Additional Work

As in many cases, I expect that I may receive additional information as discovery continues. I may be asked to analyze such information and to provide or amend my opinions as required. Also, I expect to prepare for deposition and trial and to testify as requested.

#### IX. Compensation

I am being compensated for my work at a rate of \$425 per hour. My hourly rate for testimony is \$495.

ank allen

Sincerely,

Mark R. Newton, CPA | ABV | CFF

<sup>&</sup>lt;sup>21</sup> See Schedules 7.0 and 7.2.

Case 2:15-cv-07936-SJO-GJS   Document 150-3   Filed 10/17/17	Page 10 01 57 Page 1D
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EVILIDIT 4	
EXHIBIT 1	
REPORT SCHEDULES	
	HSNO

Exhibit I
Expert Report Schedules

Report Date: August 31, 2017



#### **Index of Schedules**

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	By Year
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	By Year
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## Summary of Total Damages to Teledyne Incurred and Future Damages

Description	_	JSF		FASTr		Total	Comments
Schedule Reference		2.0		2.1			
Damages Incurred Through August 31, 2017	\$	1,882,660	\$	(166,667)	\$	1,715,994	
Future Damages (Through 2060)	<u> </u>	45,323,228		24,998,780		70,322,008	At Net Present Value
Total - Combined Damages	\$	47,205,889	\$	24,832,113	\$	72,038,002	

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### Joint Strike Fighter Damages (MBA Design/TESP Build) - Sequencers and Repairs By Year

	Joint Strike	Fighter (MBA Designed	J/TESP E	Build)	Total		Present	
		Sequencer		_	Lost	Discount	Value of	
Year	Sequencers	Repairs		Totals	Income	Factor	Lost Income	
Schedule Reference	3.0	3.1				5.0		
Discount Rate			_			8.00%	•	
2016	\$ 780,359	\$ 7,368	\$	787,727	\$ 787,727	1.00	\$ 787,727	
2017	1,627,597	14,802		1,642,399	1,642,399	1.00	1,642,399	
2018	1,776,891	22,491		1,799,382	1,799,382	1.08	1,666,095	
2019	1,951,687	37,855		1,989,542	1,989,542	1.17	1,705,711	
2020	2,304,399	46,315		2,350,713	2,350,713	1.26	1,866,072	
2021	2,060,975	145,364		2,206,338	2,206,338	1.36	1,621,724	
2022	2,410,512	186,930		2,597,442	2,597,442	1.47	1,767,776	
2023	2,470,775	222,535		2,693,310	2,693,310	1.59	1,697,242	
2024	2,532,544	267,547		2,800,091	2,800,091	1.71	1,633,826	
2025	2,607,216	298,408		2,905,623	2,905,623	1.85	1,569,818	
2026	2,672,396	338,811		3,011,207	3,011,207	2.00	1,506,353	
2027	2,739,206	389,353		3,128,559	3,128,559	2.16	1,449,128	
2028	2,807,686	433,484		3,241,170	3,241,170	2.33	1,390,082	
2029	2,877,878	479,494		3,357,372	3,357,372	2.52	1,333,259	
2030	2,949,825	527,455		3,477,280	3,477,280	2.72	1,278,589	
2031	3,036,734	577,438		3,614,173	3,614,173	2.94	1,230,485	
2032	3,300,732	844,780		4,145,511	4,145,511	3.17	1,306,838	
2033	3,396,962	923,161		4,320,123	4,320,123	3.43	1,261,003	
2034	3,509,971	995,068		4,505,040	4,505,040	3.70	1,217,572	
2035	3,612,103	1,069,920		4,682,023	4,682,023	4.00	1,171,672	
2036	4,673,587	1,168,262		5,841,849	5,841,849	4.32	1,353,627	
2037	5,971,649	1,249,802		7,221,452	7,221,452	4.66	1,549,349	
2038	6,280,741	1,291,768		7,572,509	7,572,509	5.03	1,504,322	
2039	5,959,617	1,346,030		7,305,647	7,305,647	5.44	1,343,804	
2040	6,231,620	1,379,681		7,611,301	7,611,301	5.87	1,296,321	
2041	5,577,394	1,529,410		7,106,804	7,106,804	6.34	1,120,738	
2042	5,815,324	1,603,028		7,418,352	7,418,352	6.85	1,083,212	

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### Joint Strike Fighter Damages (MBA Design/TESP Build) - Sequencers and Repairs By Year

		Joint Strike	Figh <sup>-</sup>	ter (MBA Designed/	<u>TES</u>	SP Build)		Total			Present
				Sequencer				Lost	Discount		Value of
Year		Sequencers		Repairs		Totals		Income	Factor	L	ost Income
2043		5,572,392	<u>-</u>	1,643,103	<u>-</u>	7,215,495		7,215,495	7.40		975,548
2044		5,327,402		1,684,181		7,011,582		7,011,582	7.99		877,758
2045		4,550,095		1,700,886		6,250,981		6,250,981	8.63		724,574
2046		4,626,012		1,717,363		6,343,375		6,343,375	9.32		680,819
2047		4,702,838		1,746,944		6,449,782		6,449,782	10.06		640,962
2048		4,800,495		1,763,234		6,563,729		6,563,729	10.87		603,968
2049		4,879,648		1,779,234		6,658,883		6,658,883	11.74		567,337
2050		5,001,639		1,794,919		6,796,558		6,796,558	12.68		536,173
2051		5,105,198		1,810,261		6,915,459		6,915,459	13.69		505,142
2052		5,823,107		2,202,773		8,025,880		8,025,880	14.79		542,827
2053		5,990,928		2,242,404		8,233,332		8,233,332	15.97		515,609
2054		6,186,265		2,282,636		8,468,901		8,468,901	17.25		491,075
2055		6,340,921		2,339,702		8,680,623		8,680,623	18.63		466,067
2056		923,307		2,298,347		3,221,654		3,221,654	20.12		160,159
2057		946,390		2,355,806		3,302,196		3,302,196	21.72		152,003
2058		970,049		2,414,701		3,384,750		3,384,750	23.46		144,262
2059		994,301		2,475,069		3,469,369		3,469,369	25.34		136,916
2060		1,019,158		2,536,945		3,556,103		3,556,103	27.37		129,943
Total	\$	165,696,524	\$	54,185,069	\$	219,881,593	\$	219,881,593		\$	47,205,889
By Period											
Incurred (Through 8/31/17)	\$	1,865,424	\$	17,236	\$	1,882,660	\$	1,882,660	1.00	\$	1,882,660
Future Losses	,	163,831,100	•	54,167,832	•	217,998,933	Ċ	217,998,933	4.81	•	45,323,228
Total - By Period	\$	165,696,524	\$	54,185,069	\$	219,881,593	\$	219,881,593	4.66	\$	47,205,889

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## Future Advance Sequencer Technology Replacement (FASTr) (Replacement and Repairs) - Damages By Year

								_	
	FASTr Re	trofit and New I	•	P Design/Bu	ild)	Total	<b>.</b>	Present	
Year	Sequencers		Sequencer Repairs		tal	Lost Income	Discount Factor	Value of Lost Income	
Schedule Reference	4.0		4.1				5.0		
Discount Rate	4.0		4.1				8.00%		
2016	\$	- \$	-	\$	-	\$ -	1.00	\$ -	
2017	(25	0,000)	-		(250,000)	(250,000	1.00	(250,000)	
2018	36	9,550	-		369,550	369,550	1.08	342,176	
2019	1,40	1,036	7,935		1,408,971	1,408,971	1.17	1,207,965	
2020	1,83	5,824	23,630		1,859,454	1,859,454	1.26	1,476,095	
2021	2,15	5,006	32,025		2,187,030	2,187,030	1.36	1,607,533	
2022	3,18	3,133	56,515		3,239,648	3,239,648	1.47	2,204,850	
2023	2,32	2,354	65,946		2,388,300	2,388,300	1.59	1,505,034	
2024	2,40	2,040	204,334		2,606,373	2,606,373	1.71	1,520,794	
2025	2,75	8,384	241,904		3,000,288	3,000,288	1.85	1,620,962	
2026	2,28	5,936	281,091		2,567,027	2,567,027	2.00	1,284,153	
2027	2,53	3,655	313,515		2,847,169	2,847,169	2.16	1,318,790	
2028	2,70	4,869	355,964		3,060,832	3,060,832	2.33	1,312,739	
2029	2,92	8,252	409,064		3,337,316	3,337,316	2.52	1,325,294	
2030	2,91	7,877	455,429		3,373,306	3,373,306	2.72	1,240,358	
2031	2,28	2,320	494,538		2,776,858	2,776,858	2.94	945,412	
2032	1,32	2,529	516,363		1,838,891	1,838,891	3.17	579,695	
2033	1,16	4,601	548,652		1,713,253	1,713,253	3.43	500,082	
2034	2,45	2,549	582,211		3,034,760	3,034,760	3.70	820,201	
2035	1,93	9,204	819,267		2,758,471	2,758,471	4.00	690,305	
2036	1,74	8,625	870,691		2,619,316	2,619,316	4.32	606,927	
2037	91	3,879	892,458		1,806,337	1,806,337	4.66	387,546	
2038	38	6,214	914,770		1,300,983	1,300,983	5.03	258,448	
2039	39	5,869	937,639		1,333,508	1,333,508	5.44	245,286	
2040	40	5,766	938,314		1,344,080	1,344,080	5.87	228,917	

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### Future Advance Sequencer Technology Replacement (FASTr) (Replacement and Repairs) - Damages By Year

Year			SP Design/Build)	Total		Present
Year		Sequencer		Lost	Discount	Value of
	Sequencers	Repairs	Total	Income	Factor	Lost Income
2041	392,954	926,737	1,319,692		6.34	208,114
2042	379,059	889,963	1,269,023		6.85	185,300
2043	364,014	862,970	1,226,984	1,226,984	7.40	165,890
2044	373,114	833,985	1,207,099	1,207,099	7.99	151,113
2045	356,439	828,888	1,185,327	1,185,327	8.63	137,396
2046	338,428	796,343	1,134,771	1,134,771	9.32	121,792
2047	346,889	788,911	1,135,800	1,135,800	10.06	112,873
2048	355,561	780,581	1,136,142	1,136,142	10.87	104,543
2049	335,139	771,310	1,106,449	1,106,449	11.74	94,270
2050	343,517	761,055	1,104,572	1,104,572	12.68	87,139
2051	320,937	749,770	1,070,707	1,070,707	13.69	78,210
2052	328,960	721,839	1,050,799	1,050,799	14.79	71,070
2053	303,996	707,938	1,011,934	1,011,934	15.97	63,372
2054	311,596	676,435	988,031	988,031	17.25	57,292
2055	283,988	642,804	926,792	926,792	18.63	49,760
2056	291,087	606,946	898,033	898,033	20.12	44,644
2057	260,528	568,756	829,284	829,284	21.72	38,173
2058	227,469	528,122	755,591	755,591	23.46	32,204
2059	233,155	466,083	699,238		25.34	27,595
2060	196,389	400,233	596,622		27.37	21,801
Total	\$ 48,902,689 \$	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		•	\$ 24,832,113
					•	
By Period						
Incurred (Through 8/31/17)	\$ (166,667) \$	-	\$ (166,667	\$ (166,667)	1.00	\$ (166,667
Future Losses	49,069,355	24,271,924	73,341,279	, , , ,	2.93	24,998,780
Total - By Period	\$ 48,902,689 \$				2.95	\$ 24,832,113

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#### Joint Strike Fighter (JSF) - Sequencer Damages By Year

						Sequencers Del					(=)		JUnit (B)				Tot			
	V	Outsings	Original Sales			Replacement Sale	es		Combined		(E)	Direct	Total	Mantable	1		Direct	Total	Wastali Ia	1
Vaca	Year No.		Beyond Repair/	Total	Replacement Deliveries	Beyond Repair	Total		Beyond Repair/	Total	Selling Price	Material	Labor	Variable OH	Lost	Daviania	Material	Labor	Variable OH	Lost
Year	NO.	Deliveries	Replaced	lotai	Deliveries	Replaced	Iotai	Deliveries	Replaced	Iotai	Price	Cost	Cost	UH	Income	Revenue	Cost	Cost	OH	Income
Curve Used	(C)										92%									
Escalation (	` '										2.5%									
% of Sales	,										100.00%	25.80%	1.62%	3.71%	68.87%					
,											100.0070	20.0070		0.7.70	00.01 70					
2016	1	66	-	66	-	-	-	66	-	66	\$ 17,167	\$ 4,429	\$ 278	\$ 637	\$ 11,824	\$ 1,133,016 \$	292,310	\$ 18,338	\$ 42,010	\$ 780,359
2017	2	148	-	148	-	-	-	148	-	148	15,967	4,119	258	592	10,997	2,363,134	609,671	38,247	87,620	1,627,597
2018	3	159	-	159	-	-	-	159	-	159	16,226	4,186	263	602	11,175	2,579,897	665,594	41,755	95,657	1,776,891
2019	4	172	-	172	-	-	-	172	-	172	16,475	4,250	267	611	11,347	2,833,686	731,069	45,863	105,067	1,951,687
2020	5	202	-	202	-	-	-	202	-	202	16,563	4,273	268	614	11,408	3,345,794	863,189	54,151	124,055	2,304,399
2021	6	172	1	173	-	-	-	172	1	173	17,297	4,462	280	641	11,913	2,992,363	772,007	48,431	110,950	2,060,975
2022	7	200	1	201	-	-	-	200	1	201	17,412	4,492	282	646	11,993	3,499,862	902,938	56,645	129,767	2,410,512
2023	8		1	201	=	-	-	200	1	201	17,848	4,605	289	662	12,292	3,587,358	925,511	58,061	133,011	2,470,775
2024 2025	9 10	200 200	1 2	201 202	-	-	-	200 200	1 2	201 202	18,294 18,740	4,720 4,835	296 303	678 695	12,600 12,907	3,677,042 3,785,459	948,649 976,620	59,512 61,267	136,337 140,357	2,532,544 2,607,216
2025	11	200	2	202	-	-	-	200	2	202	19,208	4,035 4,956	311	712	13,230	3,880,095	1,001,035	62,799	143,865	2,672,396
2020	12	200	2	202			-	200	2	202	19,208	5,080	319	730	13,560	3,977,097	1,026,061	64,369	147,462	2,739,206
2028	13	200	2	202	_	_	_	200	2	202	20,181	5,206	327	748	13,899	4,076,525	1,051,713	65,978	151,149	2,807,686
2029	14	200	2	202	_	_	-	200	2	202	20,685	5,337	335	767	14,247	4,178,438	1,078,005	67,627	154,927	2,877,878
2030	15	200	2	202	-	-	-	200	2	202	21,202	5,470	343	786	14,603	4,282,899	1,104,955	69,318	158,801	2,949,825
2031	16	200	3	203	-	-	-	200	3	203	21,720	5,603	352	805	14,959	4,409,084	1,137,510	71,360	163,479	3,036,734
2032	17	200	17	217	-	-	-	200	17	217	22,085	5,698	357	819	15,211	4,792,386	1,236,399	77,564	177,691	3,300,732
2033	18	200	18	218	-	-	-	200	18	218	22,624	5,837	366	839	15,582	4,932,104	1,272,445	79,825	182,872	3,396,962
2034	19	200	20	220	-	-	-	200	20	220	23,164	5,976	375	859	15,954	5,096,184	1,314,777	82,481	188,955	3,509,971
2035	20	200	21	221	-	-	-	200	21	221	23,731	6,122	384	880	16,344	5,244,471	1,353,034	84,881	194,453	3,612,103
2036	21	200	22	222	66	-	66	266	22	288	23,561	6,079	381	874	16,228	6,785,657	1,750,648	109,825	251,597	4,673,587
2037	22	200	22	222	148	-	148		22	370	23,433	6,046	379	869	16,140	8,670,335	2,236,881	140,328	321,477	5,971,649
2038 2039	23 24	200 155	23 23	223 178	158 171	-	158 171	358 326	23	381 349	23,935 24,793	6,175 6,396	387 401	887 919	16,485	9,119,110 8,652,865	2,352,661 2,232,373	147,591 140,045	338,117	6,280,741 5,959,617
2039	24 25	134	23 22	178	201	-	201	326	23 22	349 357	25,344	6,539	410	919	17,076 17,456	8,652,865 9,047,790	2,232,373	146,437	320,829 335,472	6,231,620
2040	26	113	22	135	170	1	171	283	23	306	26,464	6,827	428	981	18,227	8,097,910	2,089,199	131,063	300,253	5,577,394
2042	27	92	21	113	198	1	199	290	22	312	27,062	6,982	438	1,003	18,639	8,443,364	2,178,324	136,654	313,061	5,815,324
2043	28	71	20	91	197	1	198	268	21	289	27,995	7,223	453	1,038	19,282	8,090,646	2,087,325	130,946	299,983	5,572,392
2044	29	50	20	70	196	1	197	246	21	267	28,970	7,474	469	1,074	19,953	7,734,941	1,995,556	125,189	286,795	5,327,402
2045	30	-	18	18	197	2	199		20	217	30,444	7,854	493	1,129	20,968	6,606,357	1,704,390	106,923	244,949	4,550,095
2046	31	-	17	17	196	2	198	196	19	215	31,240	8,060	506	1,158	21,516	6,716,582	1,732,827	108,707	249,036	4,626,012
2047	32	-	16	16	195	2	197	195	18	213	32,057	8,270	519	1,189	22,079	6,828,127	1,761,605	110,512	253,172	4,702,838
2048	33	-	15	15	195	2	197	195	17	212	32,877	8,482	532	1,219	22,644	6,969,917	1,798,186	112,807	258,429	4,800,495
2049	34	-	14	14	194	2	196	194	16	210	33,737	8,704	546	1,251	23,236	7,084,841	1,827,835	114,667	262,690	4,879,648
2050	35	-	13	13	194	3	197	194	16	210	34,581	8,922	560	1,282	23,817	7,261,962	1,873,531	117,533	269,258	5,001,639
2051	36	-	12	12	194	3	197	194	15	209	35,466	9,150	574	1,315	24,427	7,412,320	1,912,322	119,967	274,833	5,105,198
2052	37	-	10	10	209	17	226	209	27	236	35,825	9,243	580	1,328	24,674	8,454,664	2,181,239	136,837	313,480	5,823,107
2053	38	-	9	9	209	19	228	209	28	237	36,702	9,469	594	1,361	25,278	8,698,325	2,244,102	140,781	322,515	5,990,928
2054 2055	39 40	-	8 7	8 7	211 211	20 21	231 232	211 211	28 28	239 239	37,581 38,521	9,696 9,938	608 623	1,393 1,428	25,884 26,531	8,981,938 9,206,486	2,317,272 2,375,204	145,371 149,005	333,031 341,356	6,186,265 6,340,921
2055	40	-	, 5	5	Z11 -	21	232	211	28 26	239	51,560	13,302	834	1,428	35,512	9,206,486 1,340,564	2,375,204 345,855	21,697	49,705	923,307
2050	42		5	5	-	21	21	-	26	26	52,849	13,635	855	1,960	36,400	1,374,078	354,502	22,239	50,948	946,390
2058	43	_	5	5	-	21	21	-	26	26	54,170	13,976	877	2,009	37,310	1,408,430	363,364	22,795	52,222	970,049
12000	70	_	3	3	-	21	21	_	20	20	J-7,170	10,570	011	2,000	37,310	1,700,700	505,504	22,133	52,222	370,043

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#### Joint Strike Fighter (JSF) - Sequencer Damages By Year

						MBA JSI	F Sequencers Deliv	ered (A)						\$/Unit (B)				Total \$	;		
				Original Sales			Replacement Sales			Combined		(E)	Direct	Total				Direct	Total		
	١ ١	Year	Original E	Beyond Repair/		Replacement	Beyond Repair			Beyond Repair/		Selling	Material	Labor	Variable	Lost		Material	Labor	Variable	Lost
Yea	r	No.	Deliveries	Replaced	Total	Deliveries	Replaced	Total	Deliveries	Replaced	Total	Price	Cost	Cost	ОН	Income	Revenue	Cost	Cost	ОН	Income
2059		44	-	5	5	-	21	21	-	26	26	55,525	14,325	899	2,059	38,242	1,443,641	372,448	23,365	53,527	994,301
2060		45	-	5	5	-	21	21	-	26	26	56,913	14,683	921	2,110	39,198	1,479,732	381,760	23,949	54,865	1,019,158
Total			4,934	454	5,388	3,710	202	3,912	8,644	656	9,300						\$ 240,577,473	\$ 62,067,164 \$	3,893,700 \$	8,920,085	\$ 165,696,524

#### Notes:

- (A) See Schedule 6.0
- (B) See Schedule 7.0
- (C) Based on discussions with TESP a 92% Pricing Curve for Sequencer Sales is standard and appropriate.
- (D) 2.5% Escalation reflects standard inflationary growth over time.
- (E) Starting point pricing based on agreed Selling Price per unit for LRIP 9 (2015 \$17,317 for Baseline 50 Units. See 'JSF Pricing Curve 2015.xls' for details.

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#### Joint Strike Fighter (JSF) - Spares/Repairs By Year

			Net Repairs (A)				\$/Unit (B)				Tota	al \$		
			Net Kepairs (A)		(E)	Direct	Total				Direct	Total		
	Year	Original	Replacement		Selling	Material	Labor	Variable	Lost		Material	Labor	Variable	Lost
Year	No.	Deliveries	Deliveries	Total	Price	Cost	Cost	OH	Income	Revenue	Cost	Cost	OH	Income
rear	140.	Deliveries	Deliveries	rotar	11100	0031	0031	011	moome	Revenue	0031	0031	On	moonic
Curve Used (C)					98%	Ī								
Escalation (D)					2.5%									
% of Sales					100.00%	16.55%	2.67%	6.68%	74.11%					
2016	-	1	-	1	\$ 9,943			\$ 664	\$ 7,368	\$ 9,943			•	\$ 7,368
2017	1	2	-	2	9,987	1,653	267	667	7,401	19,975	3,305	533	1,333	14,802
2018	2	3 5	-	3 5	10,117	1,674	270	675	7,497	30,350	5,022	810	2,026	22,491
2019 2020	3 4	6	-	5 6	10,216 10,416	1,691 1,724	273 278	682 695	7,571 7,719	51,082 62,498	8,453 10,342	1,364 1,669	3,410 4,172	37,855 46,315
2020	5	19	-	19	10,416	1,724	276	689	7,719 7,651	196,155	32,460	5,237	13,093	145,364
2021	6	24	-	24	10,524	1,708	281	702	7,031	252,245	41,743	6,735	16,838	186,930
2023	7	28	_	28	10,725	1,775	286	716	7,763	300,291	49,693	8,018	20,045	222,535
2024	8	33	_	33	10,940	1,810	292	730	8,107	361,030	59,745	9,639	24,099	267,547
2025	9	36	-	36	11,185	1,851	299	747	8,289	402,674	66,636	10,751	26,879	298,408
2026	10	40	-	40	11,430	1,891	305	763	8,470	457,195	75,658	12,207	30,518	338,811
2027	11	45	-	45	11,675	1,932	312	779	8,652	525,396	86,945	14,028	35,071	389,353
2028	12	49	-	49	11,938	1,975	319	797	8,847	584,947	96,799	15,618	39,046	433,484
2029	13	53	-	53	12,208	2,020	326	815	9,047	647,034	107,074	17,276	43,190	479,494
2030	14	57	-	57	12,487	2,066	333	834	9,254	711,752	117,784	19,004	47,510	527,455
2031	15	61	-	61	12,774	2,114	341	853	9,466	779,200	128,945	20,805	52,012	577,438
2032	16	88	-	88	12,954	2,144	346	865	9,600	1,139,953	188,644	30,437	76,093	844,780
2033	17	94	-	94	13,252	2,193	354	885	9,821	1,245,722	206,147	33,261	83,153	923,161
2034	18	99	-	99	13,563	2,244	362	905	10,051	1,342,754	222,204	35,851	89,630	995,068
2035	19	104	-	104	13,882	2,297	371	927	10,288	1,443,759	238,919	38,548	96,372	1,069,920
2036 2037	20 21	110 114	1 2	111 116	14,202	2,350	379 388	948 970	10,525	1,576,462	260,879	42,091	105,230	1,168,262
2038	22	114	3	117	14,539 14,898	2,406 2,465	398	970	10,774 11,041	1,686,494 1,743,122	279,088 288,459	45,029 46,541	112,575 116,355	1,249,802 1,291,768
2039	23	114	5	119	15,263	2,403	408	1,019	11,311	1,816,345	300,576	48,496	121,242	1,346,030
2040	24	113	6	119	15,645	2,589	418	1,044	11,511	1,861,753	308,090	49,709	124,273	1,379,681
2041	25	110	19	129	15,998	2,647	427	1,068	11,856	2,063,799	341,526	55,103	137,760	1,529,410
2042	26	108	24	132	16,387	2,712	438	1,094	12,144	2,163,139	357,965	57,756	144,391	1,603,028
2043	27	104	28	132	16,797	2,780	448	1,121	12,448	2,217,218	366,914	59,199	148,001	1,643,103
2044	28	99	33	132	17,217	2,849	460	1,149	12,759	2,272,648	376,087	60,679	151,701	1,684,181
2045	29	94	36	130	17,655	2,922	471	1,179	13,084	2,295,191	379,817	61,281	153,205	1,700,886
2046	30	88	40	128	18,105	2,996	483	1,209	13,417	2,317,424	383,497	61,875	154,690	1,717,363
2047	31	82	45	127	18,562	3,072	496	1,239	13,755	2,357,341	390,102	62,941	157,354	1,746,944
2048	32	76	49	125	19,035	3,150	508	1,271	14,106	2,379,323	393,740	63,528	158,821	1,763,234
2049	33	70	53	123	19,520	3,230	521	1,303	14,465	2,400,914	397,313	64,104	160,263	1,779,234
2050	34	64	57	121	20,017	3,313	534	1,336	14,834	2,422,079	400,815	64,669	161,675	1,794,919
2051	35	58	61	119	20,528	3,397	548	1,370	15,212	2,442,782	404,241	65,222	163,057	1,810,261
2052	36	53	89	142	20,933	3,464	559	1,397	15,512	2,972,441	491,891	79,364	198,412	2,202,773

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#### Joint Strike Fighter (JSF) - Spares/Repairs By Year

			Net Repairs (A)				\$/Unit (B)				Total	\$		
					(E)	Direct	Total				Direct	Total		
	Year	Original	Replacement		Selling	Material	Labor	Variable	Lost		Material	Labor	Variable	Lost
Year	No.	Deliveries	Deliveries	Total	Price	Cost	Cost	OH	Income	Revenue	Cost	Cost	ОН	Income
2053	37	47	94	141	21,460	3,551	573	1,432	15,904	3,025,919	500,741	80,792	201,982	2,242,404
2054	38	40	100	140	22,001	3,641	587	1,469	16,305	3,080,209	509,725	82,241	205,606	2,282,636
2055	39	34	106	140	22,552	3,732	602	1,505	16,712	3,157,214	522,468	84,297	210,746	2,339,702
2056	40	28	106	134	23,145	3,830	618	1,545	17,152	3,101,409	513,234	82,807	207,021	2,298,347
2057	41	28	106	134	23,723	3,926	633	1,584	17,581	3,178,945	526,065	84,878	212,197	2,355,806
2058	42	28	106	134	24,317	4,024	649	1,623	18,020	3,258,418	539,216	86,999	217,502	2,414,701
2059	43	28	106	134	24,924	4,125	665	1,664	18,471	3,339,879	552,697	89,174	222,939	2,475,069
2060	44	28	106	134	25,548	4,228	682	1,705	18,932	3,423,376	566,514	91,404	228,513	2,536,945
Total		2,679	1,381	4,060						\$ 73,117,795	\$ 12,099,827 \$	1,952,238	\$ 4,880,661	\$ 54,185,069
			•								·	•		

#### Notes:

- (A) See Schedule 6.0
- (B) See Schedule 7.0
- (C) Based on discussions with TESP a 98% Pricing Curve for Repairs is standard and appropriate.
- (D) 2.5% Escalation reflects standard inflationary growth over time.
- (E) Selling price based on 2016-17 40 FAST Units delivered at \$8,929. See 'Mapics Shipper Log\_HSNO.xls' for support.

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#### Future Advance Sequencer Technology Replacement (FASTr) - Sequencers By Year

					FAST	r Sequencers Delive	red (A)						\$/Unit (B)					Total \$			4
			Original Sales			Replacement Sales			Combined			Direct	Total				Direct	Total		Capitalized	
	Year	Original	Beyond Repair/		Replacement	Beyond Repair			Beyond Repair/		Selling	Material	Labor	Variable	Lost	_	Material	Labor	Variable	Tooling	Los
ar	No.	Deliveries	Replaced	Total	Deliveries	Replaced	Total	Deliveries	Replaced	Total	Price	Cost	Cost	ОН	Income	Revenue	Cost	Cost	ОН	Costs (F)	Inco
	٠,										(E)										
Used (0 tion (D)											92% 2.5%										
iles	,										100.00%	25.80%	1.62%	3.71%	60.070/						
iles											100.00%	25.60%	1.02%	3.71%	68.87%						
	1										s -	s - :	s -	\$ - :	\$ - I	\$ -	\$ - 5	s -	\$ -	s -	s
	2			_	_	_	-	_		_	-	-	-	· -	-	<u>-</u>	-	-	-	250,000	(2
	3	4	3 -	48	_	_	-	48	-	48	18,740	4,835	303	695	12,907	899,535	232,073	14,559	33,353	250,000	
	4	118	3 -	118	-	-		118	-	118	17,239	4,447	279	639	11,873	2,034,187	524,805	32,923	75,423	-	1,4
	5	150		156	-	-	-	156	-	156	17,086	4,408	277	634	11,768	2,665,463	687,669	43,140	98,830	-	1,8
	6	183	2 -	182	-	-	-	182	-	182	17,192	4,435	278	637	11,841	3,128,888	807,229	50,640	116,012	-	2,1
	7	27	6 -	276	-	-	-	276	-	276	16,763	4,325	271	622	11,545	4,621,642	1,192,349	74,800	171,360	-	3,1
	8	187	7 -	187	-	-	-	187	-	187	17,999	4,644	291	667	12,397	3,371,863	869,915	54,573	125,021	-	2,3
	9	188		189	-	-	-	188	1	189	18,427	4,754	298	683	12,691	3,487,560	899,764	56,445	129,311	-	2,4
	10	214		215	-	-	-	214	1	215	18,596	4,798	301	689	12,808	4,004,943	1,033,245	64,819	148,495	-	2,
	11	168		169	-	-	-	168	1	169	19,623	5,063	318	728	13,515	3,318,988	856,274	53,717	123,061	-	2,2
	12	183		185	-	-	-	183	2	185	19,900	5,134	322	738	13,706	3,678,654	949,065	59,538	136,396	-	2,5
	13	193		194	-	-	-	192	2	194	20,284	5,233	328	752	13,971	3,927,243	1,013,199	63,562	145,614	-	2,
	14	204		206	-	-	-	204	2	206	20,636	5,324	334	765	14,213	4,251,576	1,096,874	68,811	157,639	-	2,9
	15	198		200	-	-	-	198	2	200 147	21,234	5,478	344	787	14,625	4,236,513	1,092,988	68,567	157,081	-	2,9
	16 17	14: 7:		147 77	-	-	-	145	2	77	22,585	5,827	366	837 928	15,555 17,237	3,313,737	854,919	53,632	122,866	-	2,2
	17	6:		65	-	-	-	75 63	2	65	25,027 26,191	6,457 6,757	405 424	928 971	18,039	1,920,201 1,690,903	495,397 436,240	31,078 27,367	71,197 62,695	-	1,
	19	14:		146	-	•	-	143	2	146	24,328	6,757	394	902	16,756	3,560,896	918,684	57,632	132,030	-	2,4
	20	9:		109				93	16	109	25,837	6,666	418	958	17,795	2,815,562	726,394	45,569	104,395		1.9
	21	78		94				78	16	94	26,951	6,953	436	999	18,563	2,538,857	655,006	41,091	94,135	-	1,7
	22	2		44	_	_	-	28	16	44	30,291	7,815	490	1,123	20,863	1,326,875	342,324	21,475	49,198	_	.,
	23	_	- 16	16	_	_	_		16	16	35,047	9,042	567	1,299	24,138	560,750	144,669	9,076	20,791	-	
	24		- 16	16	-	-	-	-	16	16	35,923	9,268	581	1,332	24,742	574,769	148,286	9,303	21,311	-	
	25		- 16	16	-	-	-	-	16	16	36,821	9,500	596	1,365	25,360	589,138	151,993	9,535	21,844	-	
	26		- 15	15	-	-	-	-	15	15	38,036	9,813	616	1,410	26,197	570,537	147,194	9,234	21,154	-	
	27		- 14	14	-	-	-	-	14	14	39,312	10,142	636	1,458	27,076	550,362	141,989	8,908	20,406	-	
	28		- 13	13	-	-	-	-	13	13	40,655	10,489	658	1,507	28,001	528,518	136,354	8,554	19,596	-	
	29		- 13	13	-	-	-	-	13	13	41,672	10,751	674	1,545	28,701	541,731	139,762	8,768	20,086	-	
	30		- 12	12	-	-	-	-	12	12	43,127	11,126	698	1,599	29,703	517,520	133,516	8,376	19,188	-	
	31		- 11	11	-	-	-	-	11	11	44,670	11,525	723	1,656	30,766	491,369	126,770	7,953	18,219	-	
	32		- 11	11	-	-	-	-	11	11	45,787	11,813	741	1,698	31,535	503,653	129,939	8,152	18,674	-	
	33		- 11	11	-	-	-	-	11	11	46,931	12,108	760	1,740	32,324	516,245	133,187	8,355	19,141	-	
	34		- 10	10	-	-	-	-	10	10	48,659	12,554	788	1,804	33,514	486,593	125,537	7,875	18,042	-	
	35		- 10	10	-	-	-	-	10	10	49,876	12,868	807	1,849	34,352	498,758	128,676	8,072	18,493	-	3
	36 37		- 9	9	-	-	-	-	9	9	51,775	13,357	838	1,920	35,660	465,973	120,217	7,542	17,277	-	
	37		- 9	9	-	-	-	-	9	9	53,069 55,172	13,691 14,234	859 893	1,968 2,046	36,551 37,999	477,622 441,377	123,223 113,872	7,730 7.144	17,709 16,365	-	
	38		- 8	8	-	-	-	-	8	8	56,551	14,234	893 915	2,046	37,999	441,377 452,411	116,719	7,144	16,365	-	
	40		- 0	0 7	-	-	-	-	7	7	58,904	15,197	953	2,097	40,570	412,326	106,377	6,673	15,288	-	
	40		- <i>1</i>	7	-	-	-	-	7	7	60,376	15,197	953 977	2,104	41,584	422,635	109,037	6,840	15,266	-	
	42		- 6	6		-	_		6	6	63,044	16,265	1,020	2,338	43,421	378,264	97,589	6,122	14,025	-	
	43		- 5	5	_	_	_	_	5	5	66,053	17,041	1,069	2,449	45,494	330,265	85,206	5,345	12,246	_	
	44		- 5	5	_	_	-	_	5	5	67,704	17,467	1,096	2,510	46,631	338,522	87,336	5,479	12,552	-	
	45		- 4	4	-	-	-	-	4	4	71,285	18,391	1,154	2,643	49,097	285,140	73,564	4,615	10,572	-	
		2,938	304	3,242	-	-	-	2,938	304	3,242	1		, -	,		\$ 71,728,566				\$ 500,000	

Notes:

(A) See Schedule 6.1

(B) See Schedule 7.0

(C) Based on discussions with TESP a 92% Pricing Curve for Sequencer Sales is standard and appropriate.

(D) 2.5% Escalation reflects standard inflationary growth over time.

(E) Starting point pricing based on agreed Selling Price per unit for LRIP 9 (2015 - \$17,317 for Baseline 50 Units. See 'JSF Pricing Curve 2015.xls' for details.

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#### Future Advance Sequencer Technology Replacement (FASTr) - Sequencers By Year

					EAST	r Sequencers Delive	ared (A)						\$/Unit (B)					Total \$			
			Original Sales			Replacement Sales			Combined			Direct	Total				Direct	Total		Capitalized	
	Year	Original	Beyond Repair/		Replacement	Beyond Repair			Beyond Repair/		Selling	Material	Labor	Variable	Lost		Material	Labor	Variable	Tooling	Lost
Year	No.	Deliveries	Replaced	Total	Deliveries	Replaced	Total	Deliveries	Replaced	Total	Price	Cost	Cost	ОН	Income	Revenue	Cost	Cost	ОН	Costs (F)	Income
			•						•		(E)										
(F) Source:	ESP-P13-04	2-OUT-022H.pdf	(PROPOSAL for the	FASTr Develop	ment (FAST-rTO	C))						•			-	_				-	, 1
(F) Source:	ESP-P13-04.	2-001-022H.par	(PROPOSAL for the	FASTr Develop	oment (FAST-FTO	J))															

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#### Future Advance Sequencer Technology Replacement (FASTr) - Spares/Repairs By Year

			Repairs (A)				\$/Unit (B)				Total \$			
					(E)	Direct	Total				Direct	Total		
.,	Year	Original	Replacement		Selling	Material	Labor	Variable	Lost		Material	Labor	Variable	Lost
Year	No.	Deliveries	Deliveries	Total	Price	Cost	Cost	ОН	Income	Revenue	Cost	Cost	ОН	Income
Curve Used	(C)				98%	1								
Escalation (	` '				2.5%	1								
% of Sales	,				100.00%	16.55%	2.67%	6.68%	74.11%					
2016	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ - \$	- \$	-	\$ -
2017	1	-	-	-	-	-	-	-	-	-	-	-	-	-
2018	2		-	-	-		-			-		-		-
2019	3 4	1 3	-	1	10,707	1,772	286	715	7,935	10,707	1,772	286	715	7,935
2020 2021	4 5	4	-	3 4	10,629 10,804	1,759 1,788	284 288	709 721	7,877 8,006	31,887 43,214	5,277 7,151	851 1 154	2,128 2,885	23,630 32,025
2021	6	7	-	7	10,804	1,700	200 291	721	8,006	76,262	12,620	1,154 2,036	2,005 5,091	56,515
2022	7	8	-	8	11,124	1,841	297	743	8,243	88,988	14,726	2,376	5,940	65,946
2024	8	25	_	25	11,029	1,825	294	736	8,173	275,729	45,629	7,362	18,405	204,334
2025	9	29	-	29	11,256	1,863	301	751	8,342	326,427	54,018	8,716	21,789	241,904
2026	10	33	-	33	11,494	1,902	307	767	8,518	379,307	62,769	10,127	25,319	281,091
2027	11	36	-	36	11,752	1,945	314	784	8,709	423,060	70,010	11,296	28,240	313,515
2028	12	40	-	40	12,009	1,987	321	802	8,899	480,340	79,489	12,825	32,063	355,964
2029	13	45	-	45	12,267	2,030	328	819	9,090	551,994	91,346	14,738	36,846	409,064
2030	14	49	-	49	12,542	2,076	335	837	9,294	614,560	101,700	16,409	41,022	455,429
2031 2032	15 16	52 53	-	52 53	12,833 13,147	2,124 2,176	343 351	857 878	9,510 9,743	667,334 696,784	110,433 115,307	17,818 18,604	44,545 46,511	494,538 516,363
2032	17	55 55	-	55	13,147	2,176	359	899	9,743	740,355	122,517	19,767	49,419	548,652
2034	18	57	-	57	13,783	2,220	368	920	10,214	740,333 785,641	130,011	20,977	52,442	582,211
2035	19	79	_	79	13,994	2,316	374	934	10,370	1,105,525	182,947	29,517	73,795	819,267
2036	20	82	-	82	14,328	2,371	383	956	10,618	1,174,918	194,430	31,370	78,427	870,691
2037	21	82	-	82	14,686	2,430	392	980	10,884	1,204,291	199,291	32,154	80,387	892,458
2038	22	82	-	82	15,054	2,491	402	1,005	11,156	1,234,398	204,273	32,958	82,397	914,770
2039	23	82	-	82	15,430	2,553	412	1,030	11,435	1,265,258	209,380	33,782	84,457	937,639
2040	24	80	-	80	15,827	2,619	423	1,056	11,729	1,266,169	209,531	33,807	84,518	938,314
2041	25	77 70	-	77	16,241	2,688	434	1,084	12,036	1,250,547	206,946	33,389	83,475	926,737
2042 2043	26 27	72 68	-	72 68	16,680 17,125	2,760 2,834	445 457	1,113 1,143	12,361 12,691	1,200,924	198,734	32,065	80,162	889,963 862,970
2043	27 28	64	-	64	17,125	2,834 2,910	457 469	1,143	13,031	1,164,500 1,125,386	192,706 186,233	31,092 30,048	77,731 75,120	833,985
2044	29	62	-	62	18,040	2,910	482	1,174	13,369	1,118,508	185,095	29,864	73,120 74,661	828,888
2046	30	58	_	58	18,527	3,066	495	1,237	13,730	1,074,592	177,828	28,691	71,730	796,343
2047	31	56	-	56	19,010	3,146	508	1,269	14,088	1,064,564	176,168	28,424	71,060	788,911
2048	32	54	-	54	19,506	3,228	521	1,302	14,455	1,053,323	174,308	28,124	70,310	780,581
2049	33	52	-	52	20,016	3,312	534	1,336	14,833	1,040,813	172,238	27,790	69,475	771,310
2050	34	50	-	50	20,539	3,399	548	1,371	15,221	1,026,975	169,948	27,420	68,551	761,055
2051	35	48	-	48	21,078	3,488	563	1,407	15,620	1,011,746	167,428	27,014	67,535	749,770
2052	36	45	-	45	21,646	3,582	578	1,445	16,041	974,055	161,191	26,007	65,019	721,839

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#### Future Advance Sequencer Technology Replacement (FASTr) - Spares/Repairs By Year

			Repairs (A)				\$/Unit (B)				Tota	ıl \$		
					(E)	Direct	Total				Direct	Total		
	Year	Original	Replacement		Selling	Material	Labor	Variable	Lost		Material	Labor	Variable	Lost
Year	No.	Deliveries	Deliveries	Total	Price	Cost	Cost	ОН	Income	Revenue	Cost	Cost	ОН	Income
2053	37	43	-	43	22,216	3,676	593	1,483	16,464	955,298	158,087	25,506	63,767	707,938
2054	38	40	-	40	22,820	3,776	609	1,523	16,911	912,788	151,052	24,371	60,929	676,435
2055	39	37	-	37	23,443	3,880	626	1,565	17,373	867,405	143,542	23,160	57,900	642,804
2056	40	34	-	34	24,089	3,986	643	1,608	17,851	819,018	135,534	21,868	54,670	606,946
2057	41	31	-	31	24,758	4,097	661	1,653	18,347	767,484	127,006	20,492	51,230	568,756
2058	42	28	-	28	25,452	4,212	680	1,699	18,862	712,653	117,933	19,028	47,570	528,122
2059	43	24	-	24	26,206	4,337	700	1,749	19,420	628,936	104,079	16,793	41,982	466,083
2060	44	20	-	20	27,004	4,469	721	1,803	20,012	540,078	89,374	14,420	36,051	400,233
Total		1,947	-	1,947						\$ 32,752,741	\$ 5,420,055	\$ 874,495	2,186,267	\$ 24,271,924

#### Notes:

- (A) See Schedule 6.1
- (B) See Schedule 7.0
- (C) Based on discussions with TESP a 98% Pricing Curve for Repairs is standard and appropriate.
- (D) 2.5% Escalation reflects standard inflationary growth over time.
- (E) Beginning Selling Price for ROR (2015) based on Agreed Upon pricing for 30 Units per ESP-P14-060 Rev A. See Schedule 8.1 for Agreed Pricing.

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### Cost of Capital Aerospace/Defense Segment of Teledyne Technologies Incorporated

	Footnote	
Description	Reference	Computation
Risk free Rate	(A)	2.48%
Equity Risk Premium	(B)	5.97%
Beta	(C)	0.96
ERP x Beta		5.73% 5.73%
Size Adjustment	(D)	1.72%
Industry Adjustment	(E)	-1.32%
Total - Cost of Equity	` '	8.61%
Cost of Debt	(F)	3.27%
Tax Rate	(H)	20.90%
After Tax Cost of Debt	` '	2.59%
Weight of Debt	(I)	12.00%
WACC		7.89%
Rounded		8.00%

#### Notes:

- (A) 20-Year US Treasury Constant Maturity Bond Rate as of 6/23/17
- (B) Duff & Phelps 2017 Valuation Handbook, Appendix 3
- (C) Per Charles Schwab, Ned Davis
- (D) Duff & Phelps 2017 Valuation Handbook, Appendix 3, Market Capitalization \$1.3 billion (30% of whole; see 2016 annual report pp 41 44)

Description	i	Revenue	% of Total	Rounded
Instrumentation	\$	876.70	40.78%	40.00%
Digital Imaging		398.70	18.55%	20.00%
Aerospace and defense		615.90	28.65%	30.00%
Engineered systems		258.60	12.03%	10.00%
Total	\$	2,149.90	100.00%	100.00%

- (E) Duff & Phelps 2017 Valuation Handbook, Appendix 3a, SIC 372 Aircraft and Parts
- (F) 2016 Annual Report, page 45; assume same ratio as debt for whole company

	D	ebt (MM)	Rate	Interest (MM)
	\$	182.50	1.90%	\$ 3.47
		100.00	4.74%	4.74
		30.00	2.61%	0.78
		75.00	5.30%	3.98
		25.00	2.81%	0.70
		95.00	3.09%	2.94
		100.00	3.28%	3.28
Footnote (G)		4.20	3.27%	0.14
	\$	611.70	3.27%	\$ 20.02

- (G) Assume "other" debt is at same rate as weighted average of all other long term debt
- (H) 2016 Annual Report, page 64: Provision for Income Tax 2016 was \$50.4 million, on \$241.3 million Income Before Tax, assumes same rate as debt for entire company.
- (I) Long term debt of \$611.7 million (including current portion), market capitalization of \$4.37 billion implies 12% debt/capitalization, assumes same ratio as entire company.

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### Joint Strike Fighter (JSF) - Sequencer and Repair Quantities

				MBA Original	Deliveries			MBA Original Delivery - Returns, Replace/Repair and In-Service								MBA Replacement Deliveries + Associated Repairs and BER Replacements								ed/Repairs
	(A)	MBA A	MBA Aircraft Specific Deliveries MBA					Beg. Year		irns/Replacement			ss:	End Year	MBA	Beg. Year		urns/Replacem			Less:	End Year	Total	su/Repail 5
	Teledyne		nitted (B)	(C)	Teledyne		MBA	Original		Less:		Ejection &	(1)	Original	20-Year	Replacement		Less:		Ejection &	(1)	Replacement	Original/	Total
	(In-Service)	US	Partner/Other	Additional	Replacement		Original	Active		Beyond Repair	Net	Other	Replacement	Active	Replacement	Active		Beyond Repa	air Net	Other	Replacement	Active	Replacement	Net
Year	Deliveries	Deliveries	Deliveries	Purchases	Program (D)	Spares (E)	Deliveries	In-Service	Returns (F)	Replace (G)	Repairs	00S (H)	Deliveries	In-Service	(I)	In-Service	Returns (F)	Replace (G)	Repair	s 00S (H)	Deliveries	In-Service	+BER	Repairs
2011 2012	20 48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
2012	37	-		_	-	-	-	-	-	-		_	-	-	-	_	· -				-	-		_
2013	48	-	-	_	-	-	_	_	-	-	_		-	_							_	_		-
2015	55	-	_	-	-	-	-	-	-	-	_	-	-	-	-	-					-	-	-	-
2016	23	46	17	-	-	3	66	66	1	-	1	-	-	66	-	-			-		-	-	66	1
2017	-	63	23	-	58	4	148	214	2	-	2	-	-	214	-	-	-		-		-	-	148	2
2018	-	70	26	-	58	5	159	373	3	-	3	(1	,	372	-	-	-		-		-	-	159	3
2019	-	80	29	-	58	5 7	172	544	5	-	5	(1	,	543	-	-	-		-	-	-	-	172	5
2020 2021	-	86 105	32 39	20 20	57	/ 8	202 172	745 916	6 20	- 1	10	(1		744 913	-	-	-		-		-	-	202 173	19
2021	-	125	39 46	19	-	10	200	1,113	20 25	1	24	(3	,	1,110		-			- '		-	-	201	24
2023	_	125	46	19	_	10	200	1,310	29	1	28	(4		1,306		-					_	-	201	28
2024	-	125	46	19	-	10	200	1,506	34	1	33	(5	,	1,501	-	-	-				-	-	201	33
2025	-	125	46	19	-	10	200	1,701	38	2	36	(5	-	1,696	-	-	-		-		-	-	202	36
2026	-	125	46	19	-	10	200	1,896	42	2	40	(6	,	1,890	-	-	-		-		-	-	202	40
2027	-	125	46	19	-	10	200	2,090	47	2	45	(7		2,083	-	-	-		-	-	-	-	202	45
2028	-	125	46	19	-	10	200	2,283	51	2	49	(7		2,276	-	-	-		-	-	-	-	202	49
2029 2030	-	125 108	46 40	19 42	-	10 10	200 200	2,476 2,668	55 59	2	53 57	(8) (8)	,	2,468 2,660	-	-	-		-	-	-	-	202 202	53 57
2030	-	104	38	48	-	10	200	2,860	64	3	61	(9	,	2,851		_					-	-	202	61
2032	_	100	37	53	-	10	200	3,051	105	17	88	(8	,	3,043	-	-			_		-	_	217	88
2033	-	100	37	53	-	10	200	3,243	112	18	94	(9	, ) -	3,234	-	-			-		-	-	218	94
2034	-	100	37	53	-	10	200	3,434	119	20	99	(9	-	3,425	-	-	-		-		-	-	220	99
2035	-	100	37	53	-	10	200	3,625	125	21	104	(10		3,615	-	-	-		-	-	-	-	221	104
2036	-	100	37	53	-	10	200	3,815	132	22	110	(10		3,739	66				- 1	-	-	66	288	111
2037	-	100 87	37	53	-	10 10	200	3,939	136	22	114	(10		3,781	148				- 2		-	214 372	370	116 117
2038 2039	_	87	32	71 148	_	10 7	200 155	3,981 3,968	137 137	23 23	114 114	(10 (10		3,813 3,787	158 171				- 3	3 (1 5 (1	,	543	381 349	117
2040	-		_	128	_	6	134	3,921	135	22	113	(10		3,710	201	744			- 6	(1		744	357	119
2041	-	-	-	108	-	5	113	3,823	132	22	110	(10		3,643	170				1 19	,	,	913	306	129
2042	-	-	-	88	-	4	92	3,735	129	21	108	(10		3,527	198	1,111	25		1 24	i (3	,	1,111	312	132
2043	-	-	-	68	-	3	71	3,598	124	20	104	(9	) (197)	3,392	197	1,308	29		1 28	3 (4	-	1,308	289	132
2044	-	-	-	48	-	2	50	3,442	119	20	99	(9		3,237	196				1 33	· -	,	1,504	267	132
2045	-	-	-	-	-	-	-	3,237	112	18	94	(9		3,031	197				2 36	· ·	•	1,700	217	130
2046 2047	-	-	-	-	-	-	-	3,031 2,827	105 98	17 16	88 82	(8		2,827 2,625	196 195				2 40	(-	,	1,896 2,091	215 213	128 127
2047	-	-	-	-	-	-	-	2,827 2,625	98 91	16 15	82 76	(7 (7		2,625	195				2 45	,		2,091	213 212	127
2048	-	-	-	-	-	-	-	2,623	84	14	70	(6		2,423	193				2 48			2,480	212	123
2050	-	-	-	-	-	-	-	2,223	77	13	64	(6		2,023	194				3 57	,	•	2,673	210	121
2051	-	-	-	-	-	-	-	2,023	70	12	58	(5		1,824	194	, -			3 61	( -	· ) -	2,867	209	119
2052	-	-	-	-	-	-	-	1,824	63	10	53	(5	) (209)	1,610	209				7 89		) -	3,062	236	142
2053	-	-	-	-	-	-	-	1,610	56	9	47	(4		1,397	209				9 94	<b>\</b> -	•	3,269	237	141
2054	-	-	-	-	-	-	-	1,397	48	8	40	(4		1,182	211				20 100			3,479	239	140
2055	-	-	-	-	-	-	-	1,182	41	7	34	(3		968	211				21 106			3,689 3,689	239	140 134
2056 2057	-	-	-	-	-	-	-	968 965	33 33	5	28 28	(3		965 962	•	3,689 3,689			21 106 21 106			3,689	26 26	134
2057	-	-	-	-	-	-	-	963	33	5 5	28	(3	,	959	i i	3,689			21 106	,	,	3,689	26	134
2059	-	-	-	-	-	_	-	959	33	5	28	(3		956	-	3,689			21 106			3,689	26	134
2060	<u>-</u>					-		956	33	5	28	(3		953		3,689			21 106			3,689	26	134
Total	231	2,349	866	1,259	231	229	4,934		3,133	454	2,679	(271	) (3,710)		3,710	_	1,583	20	)2 1,381	(154	) -	_	9,300	4,060
1										-			-											

(A) Per Teledyne, 231 of its sequencers delivered to MBA are currently 'Active In-Service'.

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#### Joint Strike Fighter (JSF) - Sequencer and Repair Quantities By Year

		MBA Original Deliveries							MBA Original Delivery - Returns, Replace/Repair and In-Service						MBA Replacement Deliveries + Associated Repairs and BER Replacements									red/Repairs
	(A)	MBA Aircraft Specific Deliveries		Deliveries	MBA			Beg. Year	Beg. Year Returns/Replacement		Less:		End Year	MBA	Beg. Year	Returns/Replacement		nt	Less:		End Year	Total		
	Teledyne	Com	mitted (B)	(C)	Teledyne		MBA	Original		Less:		Ejection &	(I)	Original	20-Year	Replacement		Less:		Ejection &	(I)	Replacement	Original/	Total
	(In-Service)	US	Partner/Other	Additional	Replacement		Original	Active		Beyond Repair	Net	Other	Replacement	Active	Replacement	Active		Beyond Repair	Net	Other	Replacement	Active	Replacement	Net
Year	Deliveries	Deliveries	Deliveries	Purchases	Program (D)	Spares (E)	Deliveries	In-Service	Returns (F)	Replace (G)	Repairs	00S (H)	Deliveries	In-Service	(I)	In-Service	Returns (F)	Replace (G)	Repairs	00S (H)	Deliveries	In-Service	+BER	Repairs

- (B) Per GAO F-35 Reports the US is currently committed to the purchase of 2,457, Partners Countries are currently committed to 895 JSFs. We assume 137 JSF have been delivered as of EOY 2015 (108 US and 29 Other).
- (C) Based on the performance of other Fighter Programs, (F-16, F-18) and based on TESP's expectation, the JSF program will likely exceed the total current committed aircraft. I have used 38% increase over current commitments.
- (D) Per Teledyne, it is likely all Teledyne Design/Build Sequencers will be replaced during the next testing, expected to occur over a 4-year period.
- (E) Per Teledyne, spares typically comprise 5% of purchased sequencers. Because I calculate based on Aircraft Specific Deliveries, spares have been estimated using this rate.
- (F) See the return rates by period on Schedule 6.2.
- (G) See the beyond repair units as percentage of total returns by period on Schedule 6.2.
- (H) See ejection & other out of service rates by period on Schedule 6.2.
- (I) Specifications for Sequencers service life is defined as "at least 20 years".

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#### Future Advance Sequencer Technology Replacement (FASTr) - Sequencer and Repair Quantities By Year

										ASTr Delivery Retur						
				Associated F	Repairs and BER	Replacements				Combi	ned					
	FASTr Expected Deliveries					FASTr	Beg. Year	R	eturns/Replaceme	nt	Les	_	End Year	Total		
	Legacy	Legacy	New			FASTr	Original	Original		Less:		Ejection &	(H)	Original	Original +	
	NACES	FAST	F/18			Original	Cumulative	Active		Beyond (F)	Net	Other (G)	Aircraft	Active	Beyond	Total
Year	Retrofit (A)	Retrofit (B)	Build (C)	Total	Spares (D)	Deliveries	Deliveries	In-Service	Returns (E)	Repair/Replace	Repairs	Out-of-Service	Retirement	In-Service	Repair	Repairs
2046																
2016 2017	-	-	-	-	-	-	-	-	-	-	-			-	-	-
2017	-	-	46	46	2	48	48	48	-	-	-			48	48	-
2019	36	-	78	114	4	118	166	166	1	_	1	_	_	166	118	1
2020	116	_	38	154	2	156	322	322	3	_	3	_	_	322	156	3
2021	160	_	21	181	1	182	504	504	4	_	4	(1)	_	503	182	4
2022	149	95	30	274	2	276	780	779	7	-	7	(1)	<u>-</u>	778	276	7
2023	110	77	-	187	-	187	967	965	8	-	8	(1)	_	964	187	8
2024	84	104	_	188	-	188	1,155	1,152	26	1	25	(4)	-	1,148	189	25
2025	124	90	_	214	_	214	1,370	1,363	30	1	29	(4)	-	1,359	215	29
2026	63	105	_	168	_	168	1,538	1,527	34	1	33	(5)	=	1,522	169	33
2027	56	127	-	183	-	183	1,721	1,705	38	2	36	(5)	-	1,700	185	36
2028	83	109	_	192	_	192	1,912	1,891	42	2	40	(6)	-	1,885	194	40
2029	65	139	-	204	-	204	2,116	2,089	47	2	45	(7)	-	2,082	206	45
2030	75	123	-	198	-	198	2,314	2,280	51	2	49	(7)	-	2,273	200	49
2031	70	75	-	145	=	145	2,459	2,418	54	2	52	(8)	=	2,410	147	52
2032	-	75	-	75	-	75	2,533	2,484	55	2	53	(8)	-	2,476	77	53
2033	-	63	-	63	-	63	2,596	2,539	57	2	55	(8)	-	2,531	65	55
2034	-	143	-	143	-	143	2,739	2,674	60	3	57	(8)	-	2,666	146	57
2035	-	93	-	93	-	93	2,832	2,759	95	16	79	(7)	-	2,752	109	79
2036	-	78	-	78	-	78	2,910	2,830	98	16	82	(7)	=	2,823	94	82
2037	-	28	-	28	-	28	2,938	2,851	98	16	82	(7)	-	2,844	44	82
2038	-	-	-	-	-	-	2,938	2,844	98	16	82	(7)	-	2,837	16	82
2039	-	-	-	-	-	-	2,938	2,837	98	16	82	(7)	(36)	2,794	16	82
2040	-	-	-	-	-	-	2,938	2,794	96	16	80	(7)	(116)	2,671	16	80
2041	-	-	-	=	=	=	2,938	2,671	92	15	77	(7)	(160)	2,504	15	77
2042	-	-	=	=	=	=	2,938	2,504	86	14	72	(7)	(149)	2,348	14	72
2043	-	-	-	=	-	=	2,938	2,348	81	13	68	(6)	(110)	2,232	13	68
2044	-	-	-	=	-	=	2,938	2,232	77	13	64	(6)	(84)	2,142	13	64
2045	-	-	-	-	-	-	2,938	2,142	74	12	62	(6)	(124)	2,012	12	62
2046	-	-	-	-	-	-	2,938	2,012	69 67	11	58	(5)	(63)	1,944	11 11	58
2047 2048	-	-	-	-	-	-	2,938	1,944	67	11	56 54	(5)	(56)	1,883		56
2048	-	-	-	-	-	-	2,938 2,938	1,883 1,795	65 62	11 10	54 52	(5)	(83)	1,795 1,725	11 10	54 52
2049	-	-	-	-	-	-	2,938 2,938	1,795			52 50	(5)	(65) (75)	1,725	10	52
2050	-	-	-	-	-		2,938 2,938	1,725	60 57	10 9	48	(5)	(75) (70)	1,645	9	48
205 I	-	-	-	-	-	=	2,938	1,645	5/	9	48	(4)	(70)	1,5/1	9	48

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### Future Advance Sequencer Technology Replacement (FASTr) - Sequencer and Repair Quantities By Year

		FASTr Origin	al Deliveries +	<ul> <li>Associated F</li> </ul>	Repairs and BEF	R Replacements	6			Combined						
		FASTr Expect	ed Deliveries				FASTr	Beg. Year	R	eturns/Replacemer	nt	Les	s:	End Year	Total	
	Legacy	Legacy	New			FASTr	Original	Original		Less:		Ejection &	(H)	Original	Original +	
	NACES	FAST	F/18			Original	Cumulative	Active		Beyond (F)	Net	Other (G)	Aircraft	Active	Beyond	Total
Year	Retrofit (A)	Retrofit (B)	Build (C)	Total	Spares (D)	Deliveries	Deliveries	In-Service	Returns (E)	Repair/Replace	Repairs	Out-of-Service	Retirement	In-Service	Repair	Repairs
)52	-	=	-	=	=	-	2,938	1,571	54	9	45	(4)	(95)	1,472	9	45
)53	-	-	=	-	=	-	2,938	1,472	51	8	43	(4)	(77)	1,391	8	43
)54	-	-	=	=	=	-	2,938	1,391	48	8	40	(4)	(104)	1,283	8	40
)55	-	-	=	-	=	-	2,938	1,283	44	7	37	(3)	(90)	1,190	7	37
)56	-	-	-	=	-	-	2,938	1,190	41	7	34	(3)	(105)	1,081	7	34
)57	-	-	-	=	=	-	2,938	1,081	37	6	31	(3)	(127)	952	6	31
)58	-	-	-	-	-	-	2,938	952	33	5	28	(3)	(109)	840	5	28
)59	-	-	-	-	-	-	2,938	840	29	5	24	(2)	(139)	699	5	24
060	-	-	-	-	-	-	2,938	699	24	4	20	(2)	(123)	574	4	20
otal	1,191	1,523	213	2,927	11	2,938	_'		2,251	304	1,947	(204)	(2,160)		3,242	1,947

#### Notes:

- (A) See Schedule 6.2 for Legacy Naces units less the NACES out-of -service rate experienced over the life of the program to date.
- (B) See Schedule 6.2 for FAST units less the NACES out-of-service rate experienced over the life of the program to date.
- (C) See Email from Steven Bordeaux (U.S. Navy) to Bob Ferguson (TESP) RE: New F/18 Builds.
- (D) Per Teledyne, spares typically comprise 5% of purchased sequencers. Because I calculate based on Aircraft Specific Deliveries, spares have been estimated using this rate.
- (E) See the return rates by period on Schedule 6.2.
- (F) See the beyond repair units as percentage of total returns by period on Schedule 6.2.
- (G) See ejection & other out of service rates by period on Schedule 6.2.
- (H) Assumes aircraft retirement 20 years after FASTr retrofit.

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### Analysis of Return Rates, Beyond Repairs and Ejections (A) Legacy NACES and FAST Sequencers

																	OS Rates								
	Prograi	m Year		Legacy NACE	S		FAST				turns/Replac	ements/Repa			Ejections/O	ther OOS						_			
				Removed		-	Removed			NACES			FAST				I otal Ret	urns/Active	In-Service	Beyond	Repair/Tot	al Returns	Ejection+ Of	ther OOS/Acti	ve In-Service
Year	NACES	FAST	Shipped	from Service (B)	Active In-Service	Shipped	from Service (B)	Active In-Service	Total Returns	Beyond Repair	Net Repairs	Total Returns	Beyond Repair	Net Repairs	NACES	FAST	NACES	FAST	Combined	NACES	FAST	Combined	NACES	FAST	Combined
				•							•		-												
1989	1		42	-	42	-	-	-	-	-	-	-	-	-	-	-	0.00%	N/A	0.00%	N/A	N/A	N/A	0.00%	N/A	0.00%
1990	2		134	-	176	-	-	-	-	-	-	-	-	-	-	-	0.00%	N/A	0.00%	N/A	N/A	N/A	0.00%	N/A	0.00%
1991	3		184	-	360	-	-	-	-	-	-	-	-	-	-	-	0.00%	N/A	0.00%	N/A	N/A	N/A	0.00%	N/A	0.00%
1992	4		171	4	527	-	-	-	-	-	-	-	-	-	4	-	0.00%	N/A	0.00%	N/A	N/A	N/A	0.76%	N/A	0.76%
1993	5		127	3	651	-	-	-	-	-	-	-	-	-	3	-	0.00%	N/A	0.00%	N/A	N/A	N/A	0.46%	N/A	0.46%
1994	6		97	4	744	-	-	-	-	-	-	-	-	-	4	-	0.00%	N/A	0.00%	N/A	N/A	N/A	0.54%	N/A	0.54%
1995	7		143	5	882	-	-	-	2	1	1	-	-	-	4	-	0.23%	N/A	0.23%	50.00%	N/A	50.00%	0.45%	N/A	0.45%
1996	8		73	6	949	-	-	-	5	-	5	-	-	-	6	-	0.53%	N/A	0.53%	0.00%	N/A	0.00%	0.63%	N/A	0.63%
1997	9		64	2	1,011	-	-	-	12	-	12	-	-	-	2	-	1.19%	N/A	1.19%	0.00%	N/A	0.00%	0.20%	N/A	0.20%
1998	10		96	4	1,103	-	-	-	40	-	40	-	-	-	4	-	3.63%	N/A	3.63%	0.00%	N/A	0.00%	0.36%	N/A	0.36%
1999	11		75	-	1,178	-	-	-	27	-	27	-	-	-	-	-	2.29%	N/A	2.29%	0.00%	N/A	0.00%	0.00%	N/A	0.00%
2000	12		86	9	1,255	-	-	-	43	1	42	-	-	-	8	-	3.43%	N/A	3.43%	2.33%	N/A	2.33%	0.64%	N/A	0.64%
2001	13		81	5	1,331	-	-	-	24	2	22	-	-	-	3	-	1.80%	N/A	1.80%	8.33%	N/A	8.33%	0.23%	N/A	0.23%
2002	14	1	-	5	1,326	109		109	40	2	38	3	-	3	3	-	3.02%	2.75%	3.00%	5.00%	0.00%	4.65%	0.23%	0.00%	0.21%
2003	15	2	-	8	1,318	89		198	59	-	59	4	-	4	8	-	4.48%	2.02%	4.16%	0.00%	0.00%	0.00%	0.61%	0.00%	0.53%
2004	16	3	-	10	1,308	120	-	318	52	2	50	2	-	2	8	-	3.98%	0.63%	3.32%	3.85%	0.00%	3.70%	0.61%	0.00%	0.49%
2005	17	4	-	6	1,302	104	1	421	47	-	47	7	-	7	6	1	3.61%	1.66%	3.13%	0.00%	0.00%	0.00%	0.46%	0.24%	0.41%
2006	18	5	-	3	1,299	121	-	542	53	-	53	9	-	9	3		4.08%	1.66%	3.37%	0.00%	0.00%	0.00%	0.23%	0.00%	0.16%
2007	19	6	-	9	1,290	146	-	688	51	3	48	7	-	7	6		3.95%	1.02%	2.93%	5.88%	0.00%	5.17%	0.47%	0.00%	0.30%
2008	20	7	-	7	1,283	125			23	1	22	13	-	13	6	3	1.79%	1.60%	1.72%	4.35%	0.00%	2.78%	0.47%	0.37%	0.43%
2009	21	8	-	10	1,273	160	-	970	14	10	4	22	-	22	-		1.10%	2.27%	1.60%	71.43%	0.00%	27.78%	0.00%	0.00%	0.00%
2010	22	9	-	12		141	4	1,107	75	5	70	22	-	22	7	4	5.95%	1.99%	4.10%	6.67%	0.00%	5.15%	0.56%	0.36%	0.46%
2011	23	10	-	15	1,246	86	4	1,189	52	12	40	36	1	35	3	3	4.17%	3.03%	3.61%	23.08%	2.78%	14.77%	0.24%	0.25%	0.25%
2012	24	11	-	4	1,242	86	7	1,268	45	4	41	34	2	32	-	5	3.62%	2.68%	3.15%	8.89%	5.88%	7.59%	0.00%	0.39%	0.20%
2013	25	12	-	10	1,232	72		1,338	46	10	36	22	-	22	-	2	3.73%	1.64%	2.65%	21.74%	0.00%	14.71%	0.00%	0.15%	0.08%
2014	26	13	-	9	1,223	165	2	,	31	8	23	27	-	27	1	2	2.53%	1.80%	2.13%	25.81%	0.00%	13.79%	0.08%	0.13%	0.11%
2015	27	14	-	12		107	5	1,603	41	10	31	39	-	39	2	5	3.39%	2.43%	2.84%	24.39%	0.00%	12.50%	0.17%	0.31%	0.25%
2016	28	15	-	12		90	9	1,684	46	5	41	76	3	73	7	6	3.84%	4.51%	4.23%	10.87%	3.95%	6.56%	0.58%	0.36%	0.45%
2017	29	16		6	1,193	32	2	1,714	37	4	33	26	1	25	2	1	3.10%	1.52%	2.17%	10.81%	3.85%	7.94%	0.17%	0.06%	0.10%
Total			1,373	180	1,193	1,753	39	1,714	865	80	785	349	7	342	100	32	2.39%	2.08%	2.24%	12.32%	1.03%	6.68%	0.31%	0.16%	0.24%
					-																				
				13.11%																					
			7	o Schedule 6.	.2								amanı bı Da												

Summary by Period (C)

First 5 Year Average 0.00% 1.74% 0.00% 0.00% 0.00% 0.24% 0.05% Next 11 Year Average 2.23% 2.23% 2.23% 6.95% 1.50% 4.22% 0.41% 0.22% 0.31% 3.45% 3.45% 16.45% 16.45% 0.26% 0.26% Beyond 16 Years To Schedule 6.0/6.1 To Schedule 6.0/6.1 To Schedule 6.0/6.1

#### Notes:

(A) Source: 'FAST ROR Return History 26JUL2017.xlsx' & 'NACES ROR Return History 26JUL2017.xlsx'

(B) Removed from Service inclusive of Returns (resulting in replacement), Ejections and Other. Unless otherwise specified, the year is considered the date of last repair and/or allocated based on return/ejection rates.

(C) NACES/FAST Rates are taken on a straight line average based on the 1st year of each program (NACES - 1989) (FAST - 2002). Combined is taken as a straight average of NACES & FAST, except for beyond 16 years in which is NACES only.

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# Analysis of Variable Expense and Lost Margin Sequencer Production and Repairs

			Total (USD)		P	ercent to Revenue			Variable Expens	es and Lost Margi	in By Category
Description	5	JSF/FAST Sequencer Production	NACES/ FAST Repairs	Combined	JSF/FAST Sequencer Production	NACES/ FAST Repairs	Combined	Expense Percent Variable	Sequencer Production	Repairs	Combined
Schedule Reference		7.1	7.2					8.0			
Revenue	\$	13,380,382	\$ 3,609,457	\$ 16,989,839	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00
Factory Cost											
Labor		792,022	352,462	1,144,484	5.92%	9.76%	6.74%	27.34%	1.62%	2.67%	1.84
Material		3,452,037	597,308	4,049,345	25.80%	16.55%	23.83%	100.00%	25.80%	16.55%	23.839
ODC		1,126	1,278	2,404	0.01%	0.04%	0.01%	0.00%	0.00%	0.00%	0.00
Overhead (MFG)		1,814,444	881,168	2,695,612	13.56%	24.41%	15.87%	27.34%	3.71%	6.68%	4.349
Total - Factory Cost		6,059,629	1,832,215	7,891,844	45.29%	50.76%	46.45%		31.13%	25.89%	30.019
Net Margin (Before SG&A)	\$	7,320,753	\$ 1,777,242	\$ 9,097,995	54.71%	49.24%	53.55%		68.87%	74.11%	69.99

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## JSF and FAST Sequencer Production Revenue and Cost (By Job Number)

				Jo	b Number (A)					By Project		
	JSF P	rogra	am		FA	ST						
	2007-11		2010-16		2007-2015		2016-17				C	ombined (B)
Description	Job G261		Job G359		Job G372		Job G420	Combined	JSF	FAST	Ex	cluding G261
					To	tal (	(USD)					
Revenue	\$ 3,588,616	\$	7,096,821	\$	5,482,981	\$	800,580	\$ 16,968,997	\$ 10,685,436	\$ 6,283,561	\$	13,380,382
Factory Cost												
Labor	591,371		426,170		323,870		41,981	1,383,393	1,017,541	365,852		792,022
Material	1,084,243		1,740,939		1,486,545		224,554	4,536,280	2,825,182	1,711,098		3,452,037
ODC	31,291		971		155		-	32,417	32,262	155		1,126
Overhead (MFG)	1,380,097		948,512		759,674		106,258	3,194,541	2,328,609	865,932		1,814,444
Total - Factory Cost	3,087,002		3,116,592		2,570,244		372,793	9,146,631	6,203,594	2,943,037		6,059,629
Net Margin (Before SG&A)	\$ 501,614	\$	3,980,228	\$	2,912,737	\$	427,787	\$ 7,822,366	\$ 4,481,842	\$ 3,340,524	\$	7,320,753
					Percei	nt of	Revenue					
Revenue	100.00%		100.00%		100.00%		100.00%	100.00%	100.00%	100.00%		100.00%
Factory Cost												
Labor	16.48%		6.01%		5.91%		5.24%	8.15%	9.52%	5.82%		5.92%
Material	30.21%		24.53%		27.11%		28.05%	26.73%	26.44%	27.23%		25.80%
ODC	0.87%		0.01%		0.00%		0.00%	0.19%	0.30%	0.00%		0.01%
Overhead (MFG)	38.46%		13.37%		13.86%		13.27%	18.83%	21.79%	13.78%		13.56%
Total - Factory Cost	86.02%		43.92%		46.88%		46.57%	53.90%	58.06%	46.84%		45.29%
Net Margin (Before SG&A)	13.98%		56.08%		53.12%		53.43%	46.10%	41.94%	53.16%		54.71%

Notes:

(A) Source: Job Specific Financial Data.xlsx

(B) Exclusive of Job G261 which includes non-recurring TESP Investment.

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## JSF and FAST Sequencer Repairs Revenue and Cost (By Job Number)

						By J	lob Number (A	)					By P	rojec	
			N/	ACE	S Spares/Repa	irs				F	AST Spares	NACES/			
		2013-15	2014-15		2014-15		2015		2015-17		2015-16	FAST			
Description	J	lob G386	Job G392		Job G393		Job G397		Job G400		Job G404	Combined	NACES		FAST
							Total (USD)	)							
Revenue	\$	657,177	\$ 186,250	\$	223,600	\$	44,700	\$	1,252,580	\$	1,245,150	\$ 3,609,457	\$ 2,364,307	\$	1,245,150
		•										 			
Factory Cost															
Labor		67,582	28,418		27,502		2,809		163,999		62,153	352,462	290,310		62,153
Material		29,416	10,891		29,406		2,992		80,494		444,109	597,308	153,198		444,109
ODC		6	-		-		-		1,271	-		1,278	1,278		
Overhead (MFG)		156,372	69,974		67,745		7,012		421,443	158,622		881,168	722,546		158,622
Total - Factory Cost		253,376	109,283		124,653		12,812		667,207		664,884	1,832,215	1,167,332		664,884
Net Margin (Before SG&A)	\$	403,801	\$ 76,967	\$	98,947	\$	31,888	\$	585,373	\$	580,266	\$ 1,777,242	\$ 1,196,976	\$	580,266
						Р	ercent of Reve	enue							
Revenue	_	100.00%	100.00%		100.00%		100.00%		100.00%		100.00%	100.00%	100.00%		100.009
Factory Cost															
Labor		10.28%	15.26%		12.30%		6.28%		13.09%		4.99%	9.76%	12.28%		4.999
Material		4.48%	5.85%		13.15%		6.69%		6.43%		35.67%	16.55%	6.48%		35.679
ODC		0.00%	0.00%		0.00%		0.00%		0.10%		0.00%	0.04%	0.05%		0.009
Overhead (MFG)		23.79%	37.57%		30.30%		15.69%		33.65%		12.74%	24.41%	30.56%		12.749
Total - Factory Cost		38.56%	58.68%		55.75%		28.66%		53.27%		53.40%	50.76%	49.37%		53.409
Net Margin (Before SG&A)		61.44%	41.32%		44.25%		71.34%		46.73%		46.60%	49.24%	50.63%		46.609

Notes:

(A) Source: Job Specific Financial Data.xlsx

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### Determination of Variable Labor/Overhead Percentage Based on TESP Profit and Loss Statements (A)

		et Sales		Direct	Variable	Fixed		Total		De	reented of Sales		
Description		eเ Sales s Returns		Labor	Overhead	Overhead (C	<b>,</b>	Labor/OH	Sales	Labor	ercentage of Sales V. OH	F. OH	Labor & OH
Description	Los	3 Returns		Labor	Overneau	Overnead (O		otal (USD) (A)	Oales	Labor	V. 011	1.011	Labor & Off
	$\mathbf{T}$							(002) (r.)					
2013	\$	13,801	\$	880	\$ 1,537	\$ 3	16	\$ 2,733	100.00%	6.38%	11.14%	2.29%	19.80%
2014		13,251		734	1,540	30	08	2,582	100.00%	5.54%	11.62%	2.32%	19.48%
2015		15,107		812	1,818	3	18	2,948	100.00%	5.37%	12.03%	2.11%	19.52%
2016		11,734		818	1,612	30	80	2,738	100.00%	6.97%	13.74%	2.63%	23.33%
YTD June-2017		4,712		275	897	1	54	1,326	100.00%	5.84%	19.03%	3.26%	28.14%
				Α	II Years adjusted	to 2013 Dollars	usin	g 2.5% Escalation	, 2017 annualized to	12 months.			
2013	\$	13,801	\$	880		•	16		100.00%	6.38%	11.14%	2.29%	19.80%
2014		12,928		716	1,503		00	2,519	100.00%	5.54%	11.62%	2.32%	19.48%
2015		14,379		773	1,730		03	2,806	100.00%	5.37%	12.03%	2.11%	19.52%
2016		10,896		759	1,497		36	2,542	100.00%	6.97%	13.74%	2.63%	23.33%
2017		8,538		499	1,625	2	78	2,402	100.00%	5.84%	19.03%	3.26%	28.14%
						D		5 15	V				
	-					Determinatio	n ot	Percent Expenses	variable				
2013 - 2015 Average	\$	13,703	<b>¢</b>	790	\$ 1,590	\$ 30	06	\$ 2,686	100.00%	5.76%	11.60%	2.24%	19.60%
2016 - 2017 Average	Ψ	9,717	Ψ	629	1,561		32	2,472	100.00%	6.47%	16.06%	2.90%	25.44%
Difference	\$	(3,985)	\$	(160)			24)		100.00%	4.03%	0.73%	0.61%	5.36%
	Ť	(2,200)	<u> </u>	(100)	, (20)	, (-	٠,	, (=)	123.3070		3070	2.3.70	2.3070
Percent Variable										69.87%	6.26%	27.15%	27.34%
									_			<u> </u>	Note (B)

#### Notes:

(A) See Schedule 8.1.

(C) Definition of fixed and variable expense per Teledyne accounting methodology.

<sup>(</sup>B) 27.34% Variable Combined OH used for all categories of Labor/OH due to inter relationship of charges based on sales volume.

Schedule 8.1 Page 26 of 29

# Teledyne - Electronics Safety Products (TESP) - Profit and Loss Statements (A) 2013 - YTD June 2017

						YTD		Total - By	Periods
Description	2	2013	2014	2015	2016	June 2017	Total	2014-15	2016-17
				Total (U	SD)				
Sales									
External Gross Sales	\$	13,801 \$	13,066	14,699	\$ 11,690	\$ 4,711	\$ 57,967	\$ 27,765	16,40
Returns & Allowances	Ψ	(437)	(78)	(38)	ψ 11,000 -	(80)	(634)	(116)	(8)
Intercompany Sales		(407)	185	408	43	1	638	593	4
Total - Net Sales		13,364	13,173	15,068	11,734	4,632	57,971	28,241	16,36
Cost of Sales - Variable									
COS-Direct Labor		880	734	812	818	275	3,519	1,546	1,09
COS-Direct Material		4,066	2,980	4,236	4,575	1,505	17,363	7,217	6,08
COS-Variable Overhead		1,537	1,540	1,818	1,612	897	7,404	3,358	2,50
Total - Variable Cost of Sales		6,483	5,254	6,866	7,004	2,678	28,285	12,121	9,68
Contribution Margin		6,881	7,919	8,202	4,730	1,954	29,686	16,121	6,68
Cost of Sales - Fixed									
COS-Fixed Overhead		316	308	318	308	154	1,404	626	46
COS-Lifo Adjustment		2	45	53	(31)	(71)	(2)	98	(10
Total - Other Cost of Sales		318	352	372	277	82	1,402	724	35
Total - Cost of Sales		6,801	5,607	7,238	7,281	2,760	29,687	12,845	10,04
Gross Profit		6,563	7,566	7,830	4,453	1,872	28,284	15,397	6,32
Operating Expenses									
Selling Expense		17	-	91	81	40	229	91	12
Gen & Admin Expense		1,004	1,016	1,030	1,968	936	5,953	2,046	2,90
R & D Expense		508	(290)	46	65	(11)	319	(244)	5
Bid & Proposal Expense		238	287	276	298	155	1,253	563	45
Total - Operating Expenses		1,767	1,013	1,443	2,411	1,120	7,754	2,456	3,53
Operating Profit	\$	4,796 \$	6,553	6,388	\$ 2,041	\$ 752	\$ 20,530	\$ 12,941	2,79
				Percent of R	evenue				
Sales									

Schedule 8.1 Page 27 of 29

# Teledyne - Electronics Safety Products (TESP) - Profit and Loss Statements (A) 2013 - YTD June 2017

					YTD		Total - By F	Periods
Description	2013	2014	2015	2016	June 2017	Total	2014-15	2016-17
External Gross Sales	103.27%	99.19%	97.55%	99.63%	101.71%	99.99%	98.31%	100.22%
Returns & Allowances	-3.27%	-0.59%	-0.25%	0.00%	-1.73%	-1.09%	-0.41%	-0.49%
Intercompany Sales	0.00%	1.41%	2.71%	0.37%	0.03%	1.10%	2.10%	0.27%
Total - Net Sales	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of Sales - Variable								
COS-Direct Labor	6.58%	5.57%	5.39%	6.97%	5.94%	6.07%	5.47%	6.68%
COS-Direct Material	30.43%	22.63%	28.12%	38.99%	32.50%	29.95%	25.55%	37.15%
COS-Variable Overhead	11.50%	11.69%	12.06%	13.74%	19.36%	12.77%	11.89%	15.33%
Total - Variable Cost of Sales	48.51%	39.89%	45.57%	59.69%	57.81%	48.79%	42.92%	59.16%
Contribution Margin	51.49%	60.11%	54.43%	40.31%	42.19%	51.21%	57.08%	40.84%
Cost of Sales - Fixed								
COS-Fixed Overhead	2.36%	2.34%	2.11%	2.63%	3.32%	2.42%	2.22%	2.82%
COS-Lifo Adjustment	0.01%	0.34%	0.35%	-0.26%	-1.54%	0.00%	0.35%	-0.63%
Total - Other Cost of Sales	2.38%	2.68%	2.47%	2.36%	1.77%	2.42%	2.56%	2.20%
Total - Cost of Sales	50.89%	42.56%	48.03%	62.05%	59.58%	51.21%	45.48%	61.35%
Gross Profit	49.11%	57.44%	51.97%	37.95%	40.42%	48.79%	54.52%	38.65%
Operating Expenses								
Selling Expense	0.13%	0.00%	0.60%	0.69%	0.87%	0.39%	0.32%	0.74%
Gen & Admin Expense	7.51%	7.71%	6.84%	16.77%	20.20%	10.27%	7.24%	17.74%
R & D Expense	3.80%	-2.20%	0.30%	0.55%	-0.23%	0.55%	-0.86%	0.33%
Bid & Proposal Expense	1.78%	2.18%	1.83%	2.54%	3.34%	2.16%	1.99%	2.76%
Total - Operating Expenses	13.22%	7.69%	9.57%	20.55%	24.18%	13.38%	8.70%	21.58%
Operating Profit	35.89%	49.75%	42.39%	17.40%	16.24%	35.41%	45.82%	17.07%

Notes:

(A) Source: Electronic Safety Products Actuals (By Year)

Schedule 8.2 Page 28 of 29

# Teledyne Technologies - Aerospace and Defense Electronics Segment Selected Financial Information

Description	2010		2011		2012		2013	2014	2015	2016
		Ţ	otal Amoเ	ınts	(\$ USD in	Mil	lions)			
Sales	\$ 614.7	\$	670.8	\$	660.6	\$	625.1	\$ 603.0	\$ 593.4	\$ 615.9
Cost of Sales	451.9		458.0		442.6		434.6	386.6	383.8	377.5
Gross Margin	162.8		212.8		218.0		190.5	216.4	209.6	238.4
SG&A	 105.0		118.9		127.7		124.8	128.1	124.8	126.3
Operating Income	\$ 57.8	\$	93.9	\$	90.3	\$	65.7	\$ 88.3	\$ 84.8	\$ 112.1
Capital Expenditures	\$ 9.7	\$	13.1	\$	13.8	\$	15.3	\$ 8.8	\$ 9.1	\$ 12.6
			Pe	rce	nt of Sales	;				
Sales	100.00%		100.00%		100.00%		100.00%	100.00%	100.00%	100.009
Cost of Sales	73.52%		68.28%		67.00%		69.52%	64.11%	64.68%	61.29%
Gross Margin	 26.48%		31.72%		33.00%		30.48%	35.89%	35.32%	38.71%
SG&A	 17.08%		17.73%		19.33%		19.96%	21.24%	21.03%	20.51%
Operating Income	9.40%		14.00%		13.67%		10.51%	14.64%	14.29%	18.20%
Capital Expenditures	1.58%		1.95%		2.09%		2.45%	1.46%	1.53%	2.059

Notes:

(A) Source: Teledyne Technologies Incorporated Form 10-Ks

Schedule 8.3 Page 29 of 29

# Teledyne Technologies Consolidated Financial Statements

Description	2009	2010	2011	2012	2013		2014	2015	2016
	Tot	al Amounts	(\$ USD in M	illions)					
Net Sales	Ф 4.70F.О	Ф 4 C44 O	¢ 4.044.0	Ф 0.40 <del>7</del> .0	Ф 0.000.0	•	2 204 0	Ф 0.000.4	<b>C</b> 0.440.6
Cost of Sales	\$ 1,765.2	\$ 1,644.2	\$ 1,941.9	\$ 2,127.3	\$ 2,338.6		2,394.0	\$ 2,298.1	\$ 2,149.9
	1,256.0 509.2	1,148.1 496.1	1,290.7 651.2	1,379.1 748.2	1,500.0		1,487.1	1,427.8	1,318.0
Gross Margin				_	838.6		906.9	870.3	831.9
SG&A	343.2	317.6	424.0	505.1	598.3		612.4	588.6	578.
Operating Income	166.0	178.5	227.2	243.1	240.3		294.5	281.7	253.8
Interest and Debt Expense	(4.8)	(6.5)	(16.2)	(17.8)	(20.4	,	(19.0)	(23.9)	(23.2
Other Income	(0.1)	1.6	0.6	2.9	4.1		6.6	0.4	10.7
Income Before Taxes	161.1	173.6	211.6	228.2	224.0		282.1	258.2	241.3
Provision for Income Taxes	47.3	53.6	69.5	65.4	39.5		66.5	62.7	50.4
	113.8	120.0	142.1	162.8	184.5		215.6	195.5	190.9
Noncontrolling Interest	(0.5)	(0.1)	-	(1.0)	0.5		2.1	0.3	-
Noncontrolling Interest		(0.1) \$ 119.9	\$ 142.1	(1.0) \$ 161.8	0.5 \$ 185.0		2.1	0.3 \$ 195.8	\$ 190.
Net Income Attributable to Teledyne	(0.5) \$ 113.3	\$ 119.9		\$ 161.8	\$ 185.0	\$	217.7	\$ 195.8	,
Noncontrolling Interest  Net Income Attributable to Teledyne  Sales	(0.5) \$ 113.3 100.00%	\$ 119.9	100.00%	\$ 161.8	100.009	\$	217.7	\$ 195.8	100.00
Noncontrolling Interest  Net Income Attributable to Teledyne  Sales  Cost of Sales	(0.5) \$ 113.3 100.00% 71.15%	\$ 119.9 100.00% 69.83%	100.00% 66.47%	\$ 161.8 100.00% 64.83%	\$ 185.0 100.009 64.149	\$ 6	217.7 100.00% 62.12%	\$ 195.8 100.00% 62.13%	100.00 <sup>0</sup> 61.31 <sup>0</sup>
Noncontrolling Interest  Net Income Attributable to Teledyne  Sales  Cost of Sales  Gross Margin	(0.5) \$ 113.3 100.00% 71.15% 28.85%	\$ 119.9 100.00% 69.83% 30.17%	100.00% 66.47% 33.53%	\$ 161.8 100.00% 64.83% 35.17%	\$ 185.0 100.009 64.149 35.869	\$ 6 6	217.7 100.00% 62.12% 37.88%	\$ 195.8 100.00% 62.13% 37.87%	100.00° 61.31° 38.69°
Noncontrolling Interest  Net Income Attributable to Teledyne  Sales  Cost of Sales  Gross Margin  SG&A	(0.5) \$ 113.3 100.00% 71.15% 28.85% 19.44%	\$ 119.9 100.00% 69.83% 30.17% 19.32%	100.00% 66.47% 33.53% 21.83%	\$ 161.8 100.00% 64.83% 35.17% 23.74%	\$ 185.0 100.009 64.149 35.869 25.589	\$ 6 6	217.7 100.00% 62.12% 37.88% 25.58%	\$ 195.8 100.00% 62.13% 37.87% 25.61%	100.009 61.319 38.699 26.899
Noncontrolling Interest  Net Income Attributable to Teledyne  Sales  Cost of Sales  Gross Margin  SG&A  Operating Income	(0.5) \$ 113.3 100.00% 71.15% 28.85% 19.44% 9.40%	\$ 119.9 100.00% 69.83% 30.17% 19.32% 10.86%	100.00% 66.47% 33.53% 21.83% 11.70%	\$ 161.8 100.00% 64.83% 35.17% 23.74% 11.43%	100.009 64.149 35.869 25.589 10.289	\$ 6 6 6 6	217.7 100.00% 62.12% 37.88% 25.58% 12.30%	\$ 195.8 100.00% 62.13% 37.87% 25.61% 12.26%	100.00° 61.31° 38.69° 26.89° 11.81°
Noncontrolling Interest Net Income Attributable to Teledyne  Sales Cost of Sales Gross Margin SG&A Operating Income Interest and Debt Expense	(0.5) \$ 113.3 100.00% 71.15% 28.85% 19.44% 9.40% -0.27%	\$ 119.9 100.00% 69.83% 30.17% 19.32% 10.86% -0.40%	100.00% 66.47% 33.53% 21.83% 11.70% -0.83%	\$ 161.8 100.00% 64.83% 35.17% 23.74% 11.43% -0.84%	\$ 185.0 100.009 64.149 35.869 25.589 10.289 -0.879	\$ 6 6 6 6	217.7 100.00% 62.12% 37.88% 25.58% 12.30% -0.79%	\$ 195.8 100.00% 62.13% 37.87% 25.61% 12.26% -1.04%	100.009 61.319 38.699 26.899 11.819 -1.089
Noncontrolling Interest  Net Income Attributable to Teledyne  Sales  Cost of Sales  Gross Margin  SG&A  Operating Income	(0.5) \$ 113.3 100.00% 71.15% 28.85% 19.44% 9.40% -0.27% -0.01%	\$ 119.9 100.00% 69.83% 30.17% 19.32% 10.86% -0.40% 0.10%	100.00% 66.47% 33.53% 21.83% 11.70% -0.83% 0.03%	\$ 161.8 100.00% 64.83% 35.17% 23.74% 11.43% -0.84% 0.14%	\$ 185.0 100.009 64.149 35.869 25.589 10.289 -0.879 0.189	\$ 6 6 6 6 6	217.7 100.00% 62.12% 37.88% 25.58% 12.30% -0.79% 0.28%	\$ 195.8 100.00% 62.13% 37.87% 25.61% 12.26% -1.04% 0.02%	100.00° 61.31° 38.69° 26.89° 11.81° -1.08° 0.50°
Noncontrolling Interest Net Income Attributable to Teledyne  Sales Cost of Sales Gross Margin SG&A Operating Income Interest and Debt Expense Other Income Income Before Taxes	(0.5) \$ 113.3 100.00% 71.15% 28.85% 19.44% 9.40% -0.27% -0.01% 9.13%	\$ 119.9 100.00% 69.83% 30.17% 19.32% 10.86% -0.40% 0.10% 10.56%	100.00% 66.47% 33.53% 21.83% 11.70% -0.83% 0.03% 10.90%	\$ 161.8 100.00% 64.83% 35.17% 23.74% 11.43% -0.84% 0.14% 10.73%	\$ 185.0 100.009 64.149 35.869 25.589 10.289 -0.879 0.189 9.589	\$ 6 6 6 6 6	217.7 100.00% 62.12% 37.88% 25.58% 12.30% -0.79% 0.28% 11.78%	\$ 195.8 100.00% 62.13% 37.87% 25.61% 12.26% -1.04% 0.02% 11.24%	100.00° 61.31° 38.69° 26.89° 11.81° -1.08° 0.50°
Noncontrolling Interest Net Income Attributable to Teledyne  Sales Cost of Sales Gross Margin SG&A Operating Income Interest and Debt Expense Other Income Income Before Taxes Provision for Income Taxes	(0.5) \$ 113.3 100.00% 71.15% 28.85% 19.44% 9.40% -0.27% -0.01% 9.13% 2.68%	\$ 119.9 100.00% 69.83% 30.17% 19.32% 10.86% -0.40% 0.10% 10.56% 3.26%	100.00% 66.47% 33.53% 21.83% 11.70% -0.83% 0.03% 10.90% 3.58%	\$ 161.8 100.00% 64.83% 35.17% 23.74% 11.43% -0.84% 0.14% 10.73% 3.07%	\$ 185.0 100.009 64.149 35.869 25.589 10.289 -0.879 0.189 9.589 1.699	\$ 6 6 6 6 6 6 6 6	217.7 100.00% 62.12% 37.88% 25.58% 12.30% -0.79% 0.28% 11.78% 2.78%	\$ 195.8 100.00% 62.13% 37.87% 25.61% 12.26% -1.04% 0.02% 11.24% 2.73%	100.00° 61.31° 38.69° 26.89° 11.81° -1.08° 0.50° 11.22° 2.34°
Noncontrolling Interest Net Income Attributable to Teledyne  Sales Cost of Sales Gross Margin SG&A Operating Income Interest and Debt Expense Other Income Income Before Taxes Provision for Income Taxes Net Income	(0.5) \$ 113.3 100.00% 71.15% 28.85% 19.44% 9.40% -0.27% -0.01% 9.13% 2.68% 6.45%	\$ 119.9 100.00% 69.83% 30.17% 19.32% 10.86% -0.40% 0.10% 10.56% 3.26% 7.30%	100.00% 66.47% 33.53% 21.83% 11.70% -0.83% 0.03% 10.90% 3.58% 7.32%	\$ 161.8 100.00% 64.83% 35.17% 23.74% 11.43% -0.84% 0.14% 10.73% 3.07% 7.65%	\$ 185.0 100.009 64.149 35.869 25.589 10.289 -0.879 0.189 9.589 1.699 7.899	\$ 66 66 66 66 66 66	217.7 100.00% 62.12% 37.88% 25.58% 12.30% -0.79% 0.28% 11.78% 2.78% 9.01%	\$ 195.8 100.00% 62.13% 37.87% 25.61% 12.26% -1.04% 0.02% 11.24% 2.73% 8.51%	100.00° 61.31° 38.69° 26.89° 11.81° -1.08° 0.50° 11.22° 2.34° 8.88°
Noncontrolling Interest Net Income Attributable to Teledyne  Sales Cost of Sales Gross Margin SG&A Operating Income Interest and Debt Expense Other Income Income Before Taxes Provision for Income Taxes	(0.5) \$ 113.3 100.00% 71.15% 28.85% 19.44% 9.40% -0.27% -0.01% 9.13% 2.68%	\$ 119.9 100.00% 69.83% 30.17% 19.32% 10.86% -0.40% 0.10% 10.56% 3.26%	100.00% 66.47% 33.53% 21.83% 11.70% -0.83% 0.03% 10.90% 3.58%	\$ 161.8 100.00% 64.83% 35.17% 23.74% 11.43% -0.84% 0.14% 10.73% 3.07%	\$ 185.0 100.009 64.149 35.869 25.589 10.289 -0.879 0.189 9.589 1.699	\$ 666666666666666666666666666666666666	217.7 100.00% 62.12% 37.88% 25.58% 12.30% -0.79% 0.28% 11.78% 2.78%	\$ 195.8 100.00% 62.13% 37.87% 25.61% 12.26% -1.04% 0.02% 11.24% 2.73%	100.00° 61.31° 38.69° 26.89° 11.81° -1.08° 0.50° 11.22° 2.34°

(A) Source: Teledyne Technologies Incorporated Form 10-Ks

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## **Professional Bio**

## Mark R. Newton, CPA/ABV, CFF **Partner**

1330 Broadway Suite 430 Oakland CA 94612 Office: (206) 792-0214 Cell: (415) 279-1859

Email: mnewton@hsno.com



### **PROFESSIONAL EXPERIENCE**

### Hagen, Streiff, Newton & Oshiro, Accountants, P.C.

Mr. Newton, established the firm's Northern California practice in 1977 in San Francisco and the Seattle office in 2005. Mr. Newton was COO of HSNO from 2009 to 2015. He specializes in the measurement of Forensic Accounting, Economic Damages and Business Valuation. His experience has involved almost every industry and includes damage measurement resulting from business interruption, construction defect, business valuation cases, contract disputes, intellectual property infringement, class action, property loss, consequential losses, fraud, product liability, wage and hour cases, employee pay disputes and personal injury. Mr. Newton has significant experience in the measurement of construction claims and consequential damages for both owners and contractors. His many fraud assignments have involved embezzlement, construction claims, theft of cash, theft of inventory and other personal property, kickback schemes, and employee dishonesty. Additionally, Mr. Newton has investigated a variety of cases involving alter ego status.

### **EXPERT TESTIMONY**

Mr. Newton has testified as an expert witness on many occasions in State Court, Federal Court, arbitrations and insurance appraisals. He has also testified before the International Trade Commission in Washington, DC regarding patent infringement.

### **ALTERNATIVE DISPUTE RESOLUTION**

Mr. Newton has been appointed on several occasions to act as a neutral expert or to provide an independent accounting for multiple parties involved in a dispute.

### **EDUCATION**

- BA, Economics, University of California at Los Angeles
- Continuing Professional Education requirements fulfilled as required by the AICPA and the Washington and California State Boards of Accountancy.

### **LICENSES**

Certified Public Accountant

Washington 2008 # 26759 California 1979 # 27261

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**Professional Bio** 

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## **PROFESSIONAL ACCREDITATIONS**

- ABV Accredited in Business Valuations AICPA
- CFF Certified in Financial Forensics AICPA

### **PROFESSIONAL ASSOCIATIONS**

- American Institute of Certified Public Accountants
- National Association of Forensic Economists
- Washington Society of Certified Public Accountants
- California Society of Certified Public Accountants
- Puget Sound Adjusters Association (PSAA)
- Property Claims Association of the Pacific
- Loss Executives Association

### **RECENT PRESENTED SEMINARS**

•	Wind Energy Losses	LEA Tampa, FL	January 26, 2017
•	Econonuggets – Personal Injury	WDTL Seattle	April 27, 2016
•	Wind Energy Losses	PLRB Anaheim	April 1, 2015
•	Valuing Household Services in		
	Asbestos Litigation	ADC San Francisco	May 27, 2014
•	Expanding Business Income Loss		
	Coverage Impact of Amerigraphics	PLRB Jacksonville	November 19, 2013
•	Wind Energy Losses in the Sky	PLRB Orlando	April 16, 2012
•	Wind Energy Losses	PLRB Nashville	April 5, 2011
•	Renewable Energy Losses	PLRB San Antonio	March 22/24, 2010
•	Renewable Energy Losses	PLRB Seattle	March 23/25, 2009
•	Preventing Pain – Punitive Damages	ADC San Francisco	December 4, 2008
•	Renewable Energy Losses	PLRB Boston	April 15/16, 2008
•	Forensic Accounting in Construction	Washington Society of CPAs	
	Litigation	Bellevue	October 30, 2006
•	Extended Period		
	Business Income Loss	CCNC Sacramento	Sept. 21, 2006
•	Economic Damages		
	From Construction Defects	ADC San Francisco	Sept. 16, 2005
•	Independent Power		
	Producer Losses	PLRB Scottsdale	November 30, 2004
•	Power Generation Losses	Lloyd's of London	July 6, 2004
•	Contingent Business Interruption	PLRB Chicago	March 15/17, 2004
•	Contingent Business Interruption	PLRB Orlando	March 30, 2003
•	Pitfalls in Business	The Hartford Training	
	Interruption Claims	Sacramento	August 6, 2002
•	Duplication of Claims		
	Property Damage v. Time Element	PLRB Anaheim	April 9/10, 2002

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MARK NEWTON TESTIMONY IN LAST FOUR YEARS
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Case	Type Venue		Case #	Date
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Advance Design Consultants, Inc. vs. Gabriel Michel, et al	Trial	Santa Clara County Superior Court	1-12-CV-226289	July 25, 2017
Forty Niners SC Stadium Company LLC vs. Santa Clara Stadium Authority	Arbitration	JAMS	1100084323	June 20, 2017
KCO Imaginetics, LLC vs. James Flynn and John Nyberg	Arbtitration	Honorable Bruce Hilyer		July 12, 2017
Advance Design Consultants, Inc. vs. Gabriel Michel, et al	Deposition	Santa Clara County Superior Court	1-12-CV-226289	June 26, 2017
Stroh vs. Saturna Capital	Trial	US District Court Western District of Washington	2:16-cv-0083	June 22, 2017
Forty Niners SC Stadium Company LLC vs. Santa Clara Stadium Authority	Deposition	JAMS	1100084323	June 20, 2017
Metamorfyx, LLC, et al vs. Vanik, Vickers & Masini, et al	Trial	Los Angeles County Superior Court	BC444780	May 12, 2017
Metamorfyx, LLC, et al vs. Vanik, Vickers & Masini, et al	Deposition	Los Angeles County Superior Court	BC444780	May 25, 2017
Stroh vs. Saturna Capital	Deposition	US District Court Western District of Washington	2:16-cv-0083	February 21, 2017
Corona Summit, LLC vs. Cox Castle Nicholson LLP, et al	Deposition	Los Angeles County Central District	BC 549326	November 18, 2016
Erwin vs. Community Hospital of Monterey Peninsula	Trial	Monterey County	M131719	November 15, 2016
Gambino vs. Cypress Point RE Investors, LLC, et al	Deposition	Santa Cruz Superior	CV180979	October 27, 2016
Martin Kellogg and Mary Kellogg vs. Ralph's Concrete Pumping, Inc.	Trial	King County Superior	15-2-14229-1 SEA	September 26, 2016
Second Measure, Inc. v. Steven Kim	Deposition	US District Court of Northern California	3:15-cv-03395	September 21, 2016
Muller vs. Country Mutual Insurance Company	Deposition	US District Court of Oregon Pendleton Division	3: 14-CV-O 1345-BR	August 24, 2016
Erwin vs. Community Hospital of Monterey Peninsula	Deposition	Monterey County	M131719	August 5, 2016
Robert Harmon vs. C. Michael Hughes, et al	Trial	King County Superior	15-2-00152-3 KNT	July 21, 2016
Parker Place Group, LLC vs. Shasta Crossroads II, LLC (Wingmen V LLC as Cross Defendant/Complainant)	Deposition	Shasta County Superior	183157	July 7, 2016
ABM Parking Services, Inc. vs. Seattle Second and James LLC	Trial	King County Superior	15-2-04105-3	June 21, 2016
Helsper, et al vs. Kyriakou	Arbitration	King County Superior	13-2-030108-5	June 23, 2016



Case	Туре	Venue	Case #	Date
Stevens vs. Jiffy Lube International	Arbitration	AAA	10-15-0005-2190	June 15, 2016
Cilker Apartments, LLC vs. Western National Construction, et al	Deposition	Santa Clara County Superior	113CV258281	June 13, 2016
ABM Parking Services, Inc. vs. Seattle Second and James LLC	Deposition	King County Superior	15-2-04105-3	June 9, 2016
Cuccia vs. Purcell	Trial	Marin County Superior	CIV1201675	May 27, 2016
Stevens vs. Jiffy Lube International	Deposition	AAA	10-15-0005-2190	May 13, 2016
Cuccia vs. Purcell	Trial	Marin County Superior	CIV1201675	May 2, 2016
Armada Acquisitions Group, LLC vs. Wing Armada Acquisitions Group, LLC vs. Wing	Arbitration Arbitration	AAA AAA	01-14-0002-1948 01-14-0002-1948	February 5, 2016 February 3, 2016
State of Colorado vs. Alan DeAtley	Trial			February 2, 2016
JKL Construction, Inc. vs. URS Corporation	Arbitration			November 16, 2015
Gardner vs. San Francisco Lesbian, Gay, Bisexual, Transgender Pride Celebration Committee, Inc.	Deposition			October 22, 2015
Truck Insurance Exchange vs. Champion Steam Cleaning	Deposition			October 5, 2015
DiGiorgio, et al v. Chila	Trial			September 29, 2015
DiGiorgio, et al v. Chila	Depostion			September 28, 2015
Gotcher v. Inter-City Contractors, Inc.	Deposition			September 10, 2015
Mutual of Eunemelaw v. Gregg Roofing, Inc.	Deposition			August 4, 2015
Abiad, Yabut, et al v. Limalima, et al Abiad, Yabut, et al v. Limalima, et al	Arbitration Deposition			July 21, 2015 July 15, 2015
Coyote Valley RV v. Cusack Construction, et al	Deposition			June 4, 2015
Ingenco Holdings, et al v. ACE American Insurance	Deposition			March 11, 2015
Johnson v. Sutter Health, Sierra Region	Deposition			March 4, 2015
North Natomas v. USA Properties	Deposition			January 12, 2015
Maitri Compassionate Care v. AIDS Healthcare	Deposition			November 6, 2014
Nicholson v. Thrifty Payless and Rite Aid	Deposition			October 14, 2014
Chen v. City of Medina	Trial			August 15, 2014
Chen v. City of Medina	Deposition			August 14, 2014 July 31, 2014
Hartnett v. Forensic Analytical Specialties	Trial			July 29, 2014
Webcor - Andy Ball Matter	Testimony			July 28, 2014



Case	Type	Venue	Case #	Date
Barnard Pipeline, Inc. v. Travelers Property & Casualty	Deposition			February 6, 2014
Andrew Ball v. Wecbor, et al.	Deposition			February 4, 2014
Devil's Canyon Brewery v. B.R. Liquids	Trial			October 28/29, 2013
Sunlink v. Hypower	Arbitration			October 11, 2013
Devil's Canyon Brewery v. BRJ Liquids	Deposition			October 10, 2013
Capri Creek Associates v. Etter & Sons	Deposition			September 10, 2013
Sunlink Corporation v. Hypower, Inc.	Arbitration			July 17, 2013
SunLink Corporation v. Hypower, Inc.	Deposition			July 9, 2013
Sandoval v. Eagle Pizzeria, et al.	Deposition			June 14, 2013
AerofilterFDC, LP	Arbitration			June 13, 2013
All Continents Travel, et al. v. Travel Viva	Trial			May 22-23, 2013
Ennen v. Integon Indemnity	Trial			May 2, 2013
Jeff DeSalvo v. Mike Syben	Deposition			April 10, 2013
BRJ & Associates v. Kitchell CEM, Inc.	Arbitration			March 29, 2013
San Mateo West v. Douglas Ross Construction	Deposition			February 28, 2013
Sellen Construction 2 - FH, LLC.	Deposition			February 26, 2013
Moment v. 3130 Pacific LLC	Arbitration			December 6, 2012
Columbia Industries, Inc. vs. Zurich American Insurance Co.	Deposition			October 18, 2012
Caruso's LLC dba Fish v. Alexander Enterprises	Deposition			October 5, 2012
Slarve v. Coufal	Trial Deposition			September 17, 2012 August 16, 2012
Webcor Construction v. Wilshire Landmark, et al.	Deposition			September 11, 2012
Gul, et al. v. Garda CL West, et al.	Deposition			September 7, 2012
Rowen v. Aerometals	Arbitration			August 29, 2012
Asima Gul v. Garda Security	Deposition & Deposition			August 21, 2012 August 15, 2012
Beserra v. Griffin	Deposition			June 13, 2012
2880 Stevens Creek v. Blach Construction	Deposition			May 17, 2012
East Baybridge Partners v. Catellus Residential Construction	Deposition			May 16, 2012
Rudy v. Kaiser	Deposition			March 1, 2012

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## **EXHIBIT 3**

Case	Type	Venue	Case #	Date
Bero v. Westerdal	Deposition			January 13, 2012
Scottsdale Insurance v. Ford Motor	Depositon			December 19, 2011
Ingram v. Garda C.L. West, et al	Deposition Trial			November 28, 2011 March 9, 2012
Pacific Capital Investments v. Crystal Springs 200 Apartments, Ltd, et al	Deposition			November 2, 2011
San Clemente Housing Partners LP v Nordby Construction Co. et al	Deposition			October 21, 2011
Gustin, Schreiner & Gustin v. Siu	Trial			October 7, 2011
Becho, Inc. v. Shasta Constructors, Inc.	Arbitration Arbitration			September 12, 2011 June 30, 2011
HTI Holdings, Inc. v. Hartford Casualty Insurance Company	Deposition Deposition			July 27, 2011 January 28, 2011
U.S. Bank v. Lane	Trial			June 24, 2011
Lewison v. Discover	Deposition			June 7, 2011
Becho, Inc. v. Shasta Constructors, Inc.	Deposition			May 23, 2011



# MARK R. NEWTON RECENT EXPERT TESTIMONY - ASBESTOS

Case	Туре	Venue	Case #	Date
Michael Mandel, vs. American International Industries, et				
al.	Deposition	Alameda Superior	BC 644175	July 17, 2017
Zampa vs. Georgia-Pacific, et al	Deposition	Alameda Superior	RG16836998	March 8, 2017
Elliott vs. 3M Company, et all	Deposition	Los Angeles County Superior	BC620884	Feburary 8, 2017
Booth vs. 3M Company, et al	Deposition	Alameda Superior	RG15789131	October 21, 2016
Simcic, et al vs. DertainTeed Corporation, et al	Trial	San Francisco Superior	CGC-15-276438	October 4, 2016
Wardle vs. Fluor Corporation, et al	Deposition	Los Angeles County Superior	JCCP4674	August 12, 2016
Barber vs. 3 M Company, et al	Deposition	Alameda County	RG14731652	August 11, 2016
Colpitts vs. American International Industries, et al	Deposition	Los Angeles County Superior	BC600850/JCCP 4674	August 10, 2016
Robert Lanthier vs. A.O. Reed & Company, et al	Deposition	San Diego Superior	37-2015-00035357	June 14, 2016
Hill vs. Ameron International Corporation	Deposition			June 6, 2016
Heath vs. 3 M Company, et al	Deposition			February 24, 2016
Claudet Webber vs. Basco Drywall & Painting, Co., et al.	Deposition			February 10, 2016
Wedvik vs. Lone Star Industries, et al	Deposition			October 17, 2015
Gail Elizabeth Walashek, et al. vs. Air & Liquid Systems Corp., et al.	Depostion			October 7, 2015
Anna Grimsley v. 4520 Corporation, et al	Deposition			September 8, 2015
Hubbard, Shirley v. Asbestos Defendants	Deposition			March 23, 2015
Maia, Ernest v. Asbestos Defendants	Deposition			February 11, 2015
Boyd, Gerald v. Asbestos Defendants	Deposition			February 3, 2015
Tremblay, Christine v. Asbestos Defendants	Deposition			November 24, 2014
Cantrell, Susan v. Asbestos Defendants	Deposition			September 11, 2014
Thompson, John v. Asbestos Defendants	Deposition			September 2, 2014
Stefanson, Richard v. Asbestos Defendants	Trial			
Peoples, Edna v. Asbestos Defendants	Deposition			August 5, 2014
Stefanson, Richard v. Asbestos Defendants	Deposition			July 17, 2014
Jim Rubino, et al v. Asbestos Defendants	Deposition			June 2, 2014
Koepke, Harold and Nancy Karidis-Koepke vs. Ford Motor Company	Deposition			June 2, 2014
McBride, Sharon v. Asbestos Defendants	Deposition			May 16, 2014



# MARK R. NEWTON RECENT EXPERT TESTIMONY - ASBESTOS

Case	Туре	Venue	Case #	Date
Strouse, Susan v. Asbestos Defendants	Deposition			April 16, 2014
Hindman, Michael Eugene v. Asbestos Defendants	Trial			April 17, 2014
Hindman, Michael Eugene v. Asbestos Defendants	Deposition			April 11, 2014
Moran, Richard III v. Asbestos Defendants	Deposition			April 3, 2014
Rogers, Billy v. Asbestos Defendants	Deposition			December 9, 2013
Morgan v. J.T. Thorpe & Sons, et al	Deposition			October 29, 2013
Schildknegt v. Air & Liquid Systems Corp., et al	Deposition			October 14, 2013
LeBoa v Alta Building Material Co., et al	Deposition			August 7, 2013
McClain, Tommy & Gloria v. Asbestos Corporation	Deposition			July 26, 2013
Ronald Nelson v. Big B Lumberteria	Deposition			July 16, 2013
Jackson, Arvine v. Asbestos Defendants	Deposition			May 31, 2013
Estenson v. Asbestos Defendants	Deposition			April 23, 2013
Donald and Viola Willis v. Buffalo Pumps, Inc., et al.	Deposition			April 3, 2013
Sellen Construction 2 - FH, LLC.	Deposition			February 26, 2013
Moment v. 3130 Pacific LLC	Arbitration			December 6, 2012
Mary Ellen Kelly v. Asbestos Defendants	Deposition			November 27, 2012
Michael and Carol Corbett v. Agilent Technologies	Deposition			October 17, 2012
Geradine Lepore v. AC& S Inc., et. Al	Deposition			October 12, 2012
Lehman v. Allied, et all	Deposition			September 19, 2011
Jazuk, James & Marjorie v. American Optical, et al	Deposition			September 1, 2011
Floyd v. Liquid & Air Systems Corporation	Deposition			August 25, 2011
Bruno v. Asbestos Defendants	Deposition			June 10, 2011
Box v. Fluor, et al	Deposition			May 25, 2011

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EXHIBIT 4	
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LIST OF DOCUMENTS IN SUPPORT OF OPINIONS	
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Prepared for Rose Walker LLP RE: Teledyne RISI v. Martin-Baker

## **List of Documents in Support of Opinions**

Reference	
Number	Description
Humber	Description .
1	2014 - 2017 10-K SEC Filings Teledyne Technologies Incorporated
2	2016 Annual Report Teledyne Technologies Incorporated
3	AXIS Quotes for MBA designed JSF Sequencer dated September 4, 2015 and April 27, 2016
4	FAST ROR Contract (N00383-15-D-003P)
5	Letter of Agreement dated June 24, 2003 (MBA-JSF-T &C-2003-193)
6	JSF Teaming Agreement between MBA and TESP dated January 26, 2000
7	JSF Pricing Statement of Work between MBA and TESP dated March 5, 2003
8	2007 - 2017 Revenues & Expenditures.xls
9	2007 -2017 Revenues.xls
10	JSF and FAST Volumes By PO.xls
11	Mapics Shipper Log_HSNO.xls
12	Depositions and Exhibits of Bob Ferguson (TESP)
13	Depositions and Exhibits of Michael Summer (TESP)
14	Depositions and Exhibits of John Martin (MBA)
15	Research Relating to Original Procurement and Ultimate Deliveries of F16/F18
16	TESP FASTr Proposal Documents - ESP-P13-042-OUT-022B.doc, ESP-P13-042-OUT-022H.pdf
17	2011 Act-taken from 6-22-11-2016 Financials.xls
18	Electronic Safety Products (Segment P&L) -DEC - 2014 - ACT - 1.xls
19	Electronic Safety Products (Segment P&L) -DEC - 2015 - Actual - USD.xls
20	Electronic Safety Products (Segment P&L) -DEC - 2016 - Actual - USD.xls
21	Electronic Safety Products (Segment P&L) -JUN - 2017 - ACT - 1.xls
22	Indr Lbr Sum 2014.2017.xls
23	TESP Job Specific Financials - G261, G359, G372, G386, G392, G393, G397, G400, G402, G403, G404, G420
24	34 PL 1st Amd Complaint.pdf
25	44 MB Ans to Amd Complaint with Cclaim.pdf
26	Ejection Reports.xls
27	FAST ROR Return History 26JUL2017.xls
28	NACES ROR Return History 26JUL2017.xls
29	TESP Proposal for 8 Lot 10 LRIP Units - ESP-P15-034 - MBA - JSF LRIP 10
30	JSF Program Overview Documents - GAO Report (GAO-16-390; F-35 JOINT STRIKE FIGHTER) from April 2016
31	JSF Program Overview Documents - GAO Report (GAO-17-351; F-35 JOINT STRIKE FIGHTER) from April 2017
32	TESP Proposal for LRIP 9-11
33	ESP-P13-047 JSFTS HW 26JAN2015.xls
34	ESP-P14-060_09FEB2015.xls
35	JSF Pricing Curve_2015.xls
36	Miscellaneous Emails Regarding FAST JSF Obsolescence Issues
37	Martin-Baker_ESP JSF MOA and Teaming_TK_30Sept2015
38	August 25, 2015 letter from TESP to MBA
39	Statement of Work, MBA-JSF-SOW-2002-152 'Draft' Dated March 5, 2003
40	Email from Steven Bodreaux to Bob Ferguson RE: New F-18 Builds
41	http://economictimes.indiatimes.com/news/defence/israel-signs-deal-to-buy-17-additional-f-35-warplanes/articleshow/60251688.cms
42	https://www.reuters.com/article/us-lockheed-results-idUSKBN1A3152
43	https://www.reuters.com/article/us-airshow-paris-f35-idUSKBN1990S8